

## CHAPTER 7

# Merchandise Inventory

### KEY POINTS

The following key points are emphasized in this chapter:

- **Inventory and how it affects the financial statements.**
- **Four issues that must be addressed when accounting for inventory.**
- **General rules for including items in inventory and attaching costs to these items.**
- **The three cost flow assumptions—average, FIFO, and LIFO.**
- **The lower-of-cost-or-market rule.**

When the shareholders of Ann Taylor Stores, a national retailer of upscale women's clothing, brought suit against company management, the company was accused of misleading investors by hiding the fact that it had accumulated huge amounts of excessive and overvalued inventory. Although the company reported disappointing results, surprising Wall Street, management denied any wrongdoing. The financial press often reports incidents where management uses inventory accounting to manipulate earnings. This chapter covers inventory accounting, providing analysts the knowledge necessary to recognize how decisions involving inventory accounting influence the financial statements.

Inventory refers to items held for sale in the ordinary course of business. It is very important to retail and manufacturing enterprises, whose performance depends significantly on their sales. The demand for a company's products and the effectiveness of its inventory management are often the most important determinants of a company's success. To illustrate, *BusinessWeek* once reported that the international grocery store, Aldi, stocked only 700 product lines, compared to 20,000 at competing grocers and up to 150,000 at Wal-Mart Supercenters. Analysts following the company have noted that handling fewer items allows the company better control over quality and price, and simplifies shipping and handling functions, yielding better-than-average operating profit margins.



The Small Business Adviser in *Business Today* once noted that "your inventory must be managed well to maximize profits. Uncontrolled inventories are inefficient and costly." What are "uncontrolled inventories," and how are they inefficient and costly?

Shareholders, creditors, managers, and auditors are all justifiably interested in the amount, condition, and marketability of a company's inventory. Shareholders are interested in future sales, profits, and dividends, all of which are related to the demand for inventory, and in the efficiency with which managers acquire, carry, and sell inventory. Creditors are interested in the ability of inventory sales to produce cash that can be used to meet interest and principal payments. Creditors may also view inventory as potential collateral or security for loans. Management must ensure that inventories are acquired (or manufactured) and carried at reasonable costs. Enough inventory must be carried and available to meet constantly changing consumer demands; yet carrying too much inventory can be very costly. Auditors must ensure that the inventory dollar amount disclosed in the financial statements is determined using generally accepted accounting principles and reflects the value of the inventories actually owned. The value and marketability of a company's inventory can also provide an indication of its ability to continue as a going concern.



Excerpts from the operating section of Target Corporation's statement of cash flows are provided below (dollars in millions).

	2008	2007	2006
Net earnings	\$2,214	\$2,849	\$ 2,787
.....	.....	.....	.....
Change in inventory	77	(525)	(431)
.....	.....	.....	.....
Cash flow provided by operations	\$4,430	\$4,125	\$ 4,862?

Did Target's inventory increase or decrease during 2006, 2007, and 2008, and why is the change added to or subtracted from net earnings in the calculation of cash flow provided by operations?

## THE RELATIVE SIZE OF INVENTORIES

Note in Figure 7–1 that financial institutions and Internet firms carry little or no inventories, while inventory is very important to retailers and, to a lesser extent, to manufacturers. Inventory is by far the largest current asset for grocery store chains like Kroger; and for retailers like Lowe’s, JCPenney, and Wal-Mart, efficient and effective inventory management is the key barometer for their success. Manufacturers, like GE, invest in inventories because raw materials are necessary for the manufacturing process, but because carrying inventory is costly, they strive to minimize inventory levels, hoping to send their finished products to distributors and retailers as soon as possible. Similarly, companies that extract natural resources, like Chevron, attempt to ship their product to refineries and processing stations, and then to market, as soon as it is taken from the ground.

**FIGURE 7–1**  
Inventory as a percentage of total assets and current assets

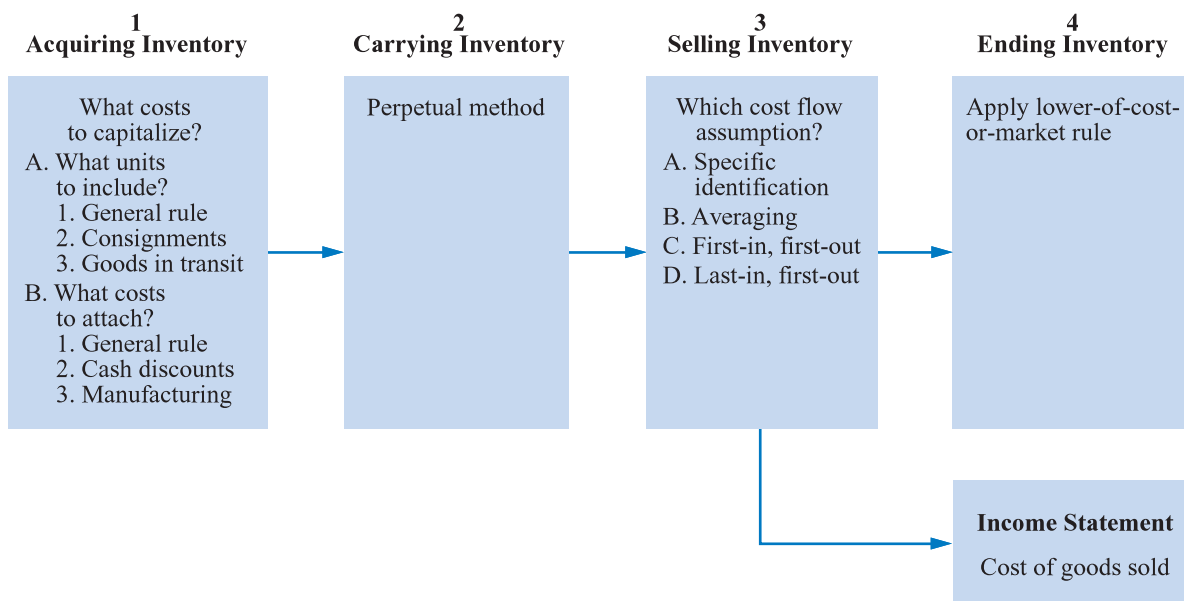
	Inventory/ Total Assets	Inventory/ Current Assets
<b>MANUFACTURING:</b>		
General Electric (Manufacturer)	0.02	0.11
Chevron (Oil drilling and refining)	0.04	0.19
<b>RETAIL:</b>		
Kroger (Grocery retail)	0.21	0.67
Lowe’s (Hardware retail)	0.25	0.89
<b>INTERNET:</b>		
Yahoo! (Internet search engine)	0.00	0.00
Cisco (Internet systems)	0.02	0.03
<b>GENERAL SERVICES:</b>		
AT&T (Telecommunications services)	0.00	0.00
Wendy’s/Arby’s (Restaurant services)	0.01	0.06
<b>FINANCIAL SERVICES:</b>		
Bank of America (Banking services)	0.00	0.00
Goldman Sachs (Investment services)	0.00	0.00



Both Hewlett-Packard, a world leader in technology development, and Yahoo!, a well-known Internet portal and search engine, play important roles in today’s high-tech business economy. One carries virtually no inventories while the other carries a substantial amount. Which is which? Explain.

## ACCOUNTING FOR INVENTORY: FOUR IMPORTANT ISSUES

Figure 7–2 summarizes four important issues that must be addressed when accounting for inventory. At the top of the figure, the life cycle of inventory is divided into four segments. Inventory is (1) acquired, through purchase or manufacture, and then (2) carried on the company’s balance sheet. It then either (3) is sold or (4) remains on

**FIGURE 7-2** Accounting for inventory: Four important issues

the balance sheet as ending inventory. At each of these four points, an important issue in financial accounting must be addressed. The remainder of the chapter covers these four points in order.

## ACQUIRING INVENTORY: WHAT COSTS TO CAPITALIZE?

Inventory costs are capitalized because inventories are assets that provide future economic benefits. When inventories are sold, these benefits are realized. According to the matching principle, the capitalized cost should at this time be matched against the revenue recognized from the sale. Determining the amount of capitalized cost involves two steps: The number of items or units that belong in inventory must first be determined, and then costs must be attached to each item.

### What Items or Units to Include?

Decisions as to what items or units to include in inventory are governed by a general rule. However, the general rule is not always simple to apply.

#### GENERAL RULE

Items should be included in a company's inventory if they are being held for sale and the company has complete and unrestricted ownership of them. Such ownership indicates that (1) the company bears the complete loss if the inventory is lost, stolen, or destroyed and (2) the company owns all rights to the benefits produced by the items.

In most cases, ownership is accompanied by possession: Companies that own inventory are usually in possession of it. Under these circumstances, determining the number of units that belong in inventory is straightforward: The number of inventory

units on the company's premises can simply be counted. In some cases, however, ownership is not accompanied by possession, and it becomes somewhat more difficult to find and determine the appropriate number of inventory units. Consignments and goods in transit are two common examples.

### CONSIGNMENTS

In a **consignment**, a *consignor* (the owner) transfers inventory to a *consignee* (receiver), who takes physical possession and places the inventory up for sale. When it is sold, the consignee collects the sale proceeds, keeps a percentage of the proceeds for the service, and transfers the remainder to the consignor.

When accounting for consignments, it is important to realize that ownership, not physical possession, determines the balance sheet on which consigned inventory is disclosed. Since consigned inventory is owned by the consignor, it belongs on the consignor's balance sheet, even though it is physically located on the consignee's premises. When preparing or using financial statements, managers must be sure that consigned inventory has been treated in the appropriate manner. Misclassifying it would misstate the inventory balance, current assets, cost of goods sold, gross profit, and net income.



Saks, a fashion retail store, reported 2008 consignment inventories of \$139 million not reflected on the company's balance sheet. Explain what consignment inventories are and why they would not be reflected on Saks's balance sheet.

### GOODS IN TRANSIT

When inventory is sold, the seller records a sale and the buyer records a purchase. Theoretically, both parties should record the transaction at exactly the same moment: the point in time when the ownership of the inventory transfers from the seller to the buyer. For practical purposes, however, most sales are recorded when goods are shipped, and most purchases are recorded when goods are received. Since goods are often in transit between the seller and the buyer for as long as several days, sellers and buyers often record the same transaction at two different points in time. This practice is acceptable except in cases where there are **goods in transit** at the end of an accounting period. For example, suppose that Buyer & Co. (located in Seattle, Washington) purchased goods on account from Seller Inc. (located in New York) on December 29. Seller delivered the goods immediately to XYZ Trucking Co., and the goods are in transit on December 31, the balance sheet date for both Buyer and Seller.

Accounting for this transaction in an appropriate manner involves determining who owns the goods while they are in transit. The most common way of determining ownership is to examine the freight terms associated with the shipment. These terms normally indicate which party bears the responsibility for shipping the goods and thereby owns them while they are in transit. The freight term of FOB shipping point (destination) indicates that the purchaser (seller) owns the inventory during transit.

**FOB (free on board) shipping point** indicates that the seller is responsible for the goods only to the point from which they are shipped. In the example, if the goods were shipped FOB shipping point, Seller Inc. would be responsible to deliver the goods to XYZ Trucking. From that point to Seattle, Buyer would be considered the owner of the

goods, and their value would belong on Buyer's December 31 balance sheet. Both an inventory purchase on Buyer's books and a sale on Seller's books should be recorded.

**FOB (free on board) destination** indicates that the seller is responsible for the goods all the way to their destination. If the goods in the example were shipped FOB destination, Seller Inc. would be considered the owner of the goods until they reached Seattle. In this case, the goods would belong in Seller's inventory, and neither a purchase nor a sale would be recognized as of December 31.

Transactions near the end of an accounting period are often difficult to account for correctly. Managers must examine freight invoices and other related documents to ensure that sales and purchases are placed in the proper accounting periods and that, as of the balance sheet date, the number of inventory units on a company's balance sheet accurately reflects the inventory units actually owned. Similar to consignments, misclassifying goods in transit can misstate important financial statement numbers and ratios.



The 2008 annual report of Kellogg Company states, "The company recognizes sales upon delivery of its product to customers. . . ." What does this policy imply about goods in transit shipped by Kellogg? Explain how the revenue recognition policy influences the inventory amount carried on the balance sheet.

### What Costs to Attach?

Once the number of items to be included in inventory has been determined, costs must be attached to these items to produce the total capitalized inventory cost. The general rule that guides this process and how it applies to inventory purchases and manufacturing operations is discussed in the following section.

#### GENERAL RULE

All costs associated with the manufacture, acquisition, storage, or preparation of inventory items should be capitalized and included in the inventory account. Included are the costs required to bring inventory items to saleable condition, such as the costs of purchasing, shipping in (called **freight-in** or **transportation-in**), manufacturing, and packaging. This rule is not difficult to apply in most cases, but two relatively common areas require further discussion. They are (1) accounting for cash (purchase) discounts on inventory purchases and (2) determining the costs of manufacturing inventories.



Lowe's Companies, Inc. reported in its 2008 annual report: "The cost of inventory also includes certain costs associated with the preparation of inventory for resale. . . ." Suppose that Lowe's paid \$5 million in 2008 to assemble light fixtures before displaying them for sale. Explain how Lowe's would account for this cost.

#### ACCOUNTING FOR CASH (PURCHASE) DISCOUNTS

Chapter 6 discusses accounting for cash (purchase) discounts from the seller's point of view. There we commented that the gross method establishes a credit sale and the corresponding account receivable at the gross price and recognizes a discount if payment

is received within the discount period. Accounting for cash (purchase) discounts on inventory purchases is exactly the same, except now it is from the buyer's point of view. The inventory purchase is booked at the gross price, and if payment is made within the discount period, the carrying value of the inventory is reduced by the discount. If the discount is missed, the inventory is carried at the gross amount.

It is generally not advisable for companies to miss discounts. Under terms 2/10, n/30, for example, a purchasing company that makes a \$1,000 payment 20 days after the expiration of the 10-day discount period would be paying a \$20 financing charge. This situation is equivalent to borrowing cash at a 36.5 percent ( $[\$20/\$1,000] \times [365 \text{ days}/20 \text{ days}]$ ) annual rate of interest. Missing discounts, therefore, can be very expensive.

Companies that miss discounts because they are short of cash would be better off borrowing from a bank at a rate much lower than 36.5 percent and using the proceeds to pay those suppliers offering cash (purchase) discounts. Consequently, most purchasing companies attempt to make payment within the discount period. Inability to do so can be a sign of mismanagement and/or serious financial problems.



Dell is one of the leaders in the personal computer market, staking its claim with superior inventory management. Its 2008 annual report shows sales and cost of goods sold of \$61 and \$50 billion, respectively, and an investment in inventory of only \$867 million. Almost incredibly, Dell turned its inventory over 49 times (every 7.4 days) during 2008. Discuss how effective inventory management can boost cash flow.

## DETERMINING THE COSTS OF MANUFACTURING INVENTORIES

**Retail companies**, like Sears, Wal-Mart, Target, Macy's, and JCPenney, simply purchase inventories (usually from manufacturers) and sell them for prices that exceed their costs. Retailers primarily provide a distribution service, rarely changing or improving the inventories they sell. As a result, the capitalized inventory cost for a retail operation consists primarily of only two components: (1) the purchase cost and (2) freight-in, the cost of shipping the goods to the retailer. If Wal-Mart, for example, purchases merchandise for \$5,000 cash and pays \$500 to have the goods shipped to one of its stores, the following journal entry would be recorded:

<b>Inventory (+A)</b>	<b>5,500</b>	
<b>Cash (-A)</b>		<b>5,500</b>
<i>Purchased inventory, including freight-in charges</i>		

The operations of **manufacturing companies**, like IBM, General Electric, General Motors, Procter & Gamble, RJR Nabisco, and Johnson & Johnson, are much more complex. These companies purchase raw materials and use processes involving labor and other costs to manufacture their inventories. The capitalized inventory cost therefore includes the cost of acquiring the raw materials, the cost of the labor used to convert the raw materials to finished goods, and other costs that support the production process. These other costs, called **overhead**, include such items as indirect materials (e.g., cleaning supplies), indirect labor (e.g., salaries of line managers), depreciation of fixed assets, and utility and insurance costs.

The capitalized inventory costs of manufacturing operations include all costs required to bring the inventory to saleable condition. In this general respect, accounting for manufacturing operations is no different from accounting for retail operations. However, in manufacturing, virtually any cost that can be linked to the production process

should be allocated to the inventory account. Therefore, costs like depreciation, wages and salaries, rent, and insurance are often capitalized as part of the inventory cost and, accordingly, are matched against revenues when the finished inventory is sold.

The footnotes to the 2008 financial statements of Intel Corporation contained the following information (dollars in millions):

	2008	2007
Raw materials	\$ 608	\$ 507
Work in process	1,577	1,460
Finished goods	1,559	1,403
	<u>\$3,744</u>	<u>\$3,370</u>

Is Intel a retailer or a manufacturer? What dollar amount appeared in the inventory account on the 2008 balance sheet? Provide several examples of the kinds of costs included in work in process and finished goods.

Financial statement users should be aware that allocating overhead costs to inventory is a very subjective process, requiring expertise, that can have significant effects on important financial numbers and ratios. These allocations give management substantial influence over the financial statements. General Electric, for example, once reported in the footnotes of its annual report that it “changed its accounting procedures to include certain inventory costs [including depreciation and other product costs] previously charged directly to expense.” The change increased reported net income by \$281 million.

## CARRYING INVENTORY: PERPETUAL METHOD

Until relatively recently, many companies (especially large retail and manufacturing operations) had difficulty maintaining a continuous record of inventory balances due to the speed with which inventories flowed in and out of the business. The number and variety of transactions were just too great to perpetually maintain an accurate count at a reasonable cost. Consequently, to prepare financial statements (i.e., compute the cost of goods sold and ending inventory), companies were forced to periodically disrupt operations and count their inventories.

Electronic data processing has dramatically reduced the cost of record keeping, and now most companies have moved—or are moving—toward computerized systems that maintain perpetual inventory balances. The bar code systems you see in major grocery stores (e.g., Safeway) and retailers (e.g., Target) are common examples. While these systems do not eliminate the need to periodically count inventories, they offer a much greater level of control over inventories—a key element for the success of manufacturers and retailers. In this section, we describe the **perpetual inventory method**.

The perpetual inventory method is straightforward. When inventory is purchased, the inventory account is increased by the cost of the purchase; and when an inventory sale is made, the account is decreased by the amount of the cost of the sold inventory. Accordingly, perpetual balances are maintained in the inventory and cost of goods sold accounts. At the end of the accounting period, though not necessary for the preparation of the financial statements, an inventory count should be taken. The count provides an inventory amount that can be compared to the amount in the inventory account to



FIGURE 7-3

Perpetual  
inventory

Assume that inventory at the beginning of December is \$2,500 (125 units at \$20 per unit), and the following events occurred during December, and the inventory T-account follows.

**December 10:** Purchased 100 units of inventory on account for \$20 per unit.

Inventory (+A)	2,000 <sup>a</sup>	
Accounts payable (+L)		2,000

**December 20:** Sold 50 units of inventory for cash at \$30 per unit.

Cash (+A)	1,500 <sup>b</sup>	
Sales (R, +RE)		1,500
COGS (E, -RE)	1,000 <sup>c</sup>	
Inventory (-A)		1,000

**December 30:** An inventory count reveals that 170 units are on hand.

Loss (E, -RE)	100 <sup>d</sup>	
Inventory (-A)		100

Inventory			
Beginning balance	2,500		
12/10 purchase	2,000		
		12/20 sale	1,000
Balance before count	3,500		
		Loss	100
Balance after count	3,400		

<sup>a</sup>(100 units × \$20)

<sup>b</sup>(50 units × \$30)

<sup>c</sup>(50 units × \$20)

<sup>d</sup>(175 units - 170 units) × \$20

ascertain whether actual inventory matches the company's perpetual inventory record. Figure 7-3 provides an illustration.

Note that the perpetual method in combination with the end-of-period inventory count identifies a weakness in the company's inventory control procedures. One hundred and seventy-five units (125 + 100 - 50) were expected, but only 170 were found. Consequently, management is now alerted to an inventory control problem. The system does not offer an explanation for the five-unit shortage (e.g., theft, spoilage, inaccurate record keeping), but it does invite management to review the system.

Review Figure 7-3 again, and assume that the company lacked the technical ability (or chose not) to record the cost of the sold inventory (\$1,000) for the December 20 sale. Instead, to compute cost of goods sold, the company relied upon the December 30 inventory count, and used the following formula.

$$\text{Cost of goods sold} = \text{Beginning inventory} + \text{Purchases} - \text{Ending inventory}$$

$$\$1,100 \qquad \qquad \$2,500 \qquad + \qquad \$2,000 \qquad - \qquad \$3,400 \text{ (170 units} \times \$20 \text{ per unit)}$$

This is an example of what is called the **periodic inventory method** because it computes cost of goods sold *periodically* (at the end of each reporting period) instead of *perpetually* (at the time of each sale). In this example it produces a cost of goods sold amount of \$1,100, compared to the perpetual method, which produced a cost of goods sold amount of \$1,000 and a loss due to the inventory shortage of \$100. Under the

periodic method, management never learns that there is an inventory control problem; the cost of the problem is “buried” in the cost of goods sold number.



CVS Corporation, a leading pharmacy retailer, takes independent physical counts on a regular basis at each location to ensure that the amounts reflected in the financial statements are accurate. Between physical counts, the company accrues for anticipated physical inventory losses on a location-by-location basis. Explain why CVS spends so much time and effort attempting to ensure accurate inventory counts.

### ERRORS IN THE INVENTORY COUNT

Errors in the inventory count misstate both inventory on the balance sheet and net income on the income statement of that period. Such errors also misstate net income in the subsequent period by an equal dollar amount in the opposite direction. For example, an error in the inventory count taken at the end of 2011 that understates inventory by \$2,000 will also understate 2011’s net income by \$2,000. In addition, this error if uncorrected will cause net income of 2012 to be overstated by \$2,000.

To illustrate, assume that Rainier Corporation began operations on January 1, 2011. Figure 7–4 summarizes the transactions entered into by the company during 2011 and 2012 and contains accurate inventory balances and income statements for the two years. Assume that the only expenses incurred by the company were the costs of sold inventories.

**FIGURE 7–4**  
Rainier  
Corporation:  
Transactions for  
2011–2012

	Inventory	Sales
<b>2011</b>		
(1) Purchased 500 units of inventory for \$1 per unit	\$500	
(2) Sold 200 units of inventory for \$3 per unit	(200)	\$ 600
Ending inventory	<u>\$300</u>	
Sales (\$600) – Cost of Goods Sold (\$200) = Net Income (\$400)		
<b>2012</b>		
Beginning inventory	\$300	
(1) Purchased 600 units of inventory for \$1 per unit	600	
(2) Sold 700 units of inventory for \$3 per unit	(700)	\$2,100
Ending inventory	<u>\$200</u>	
Sales (\$2,100) – Cost of Goods Sold (\$700) = Net Income (\$1,400)		

Suppose that Rainier Corporation made no accounting errors during 2011 or 2012 except that it failed to include 20 items of inventory, each with a cost of \$1, in its inventory count at the end of 2011. Inventory was thus determined incorrectly to be \$280 instead of \$300. Inventory was correctly counted at the end of 2012. The cost of goods sold and the inventory calculations for 2011 and 2012 appear in Figure 7–5. Income statements assuming accurate information and the miscounting error are shown in Figure 7–6.

In summary, a single error in the counting of inventory caused net income of 2011 and net income of 2012 to be misstated by equal dollar amounts (\$20) in opposite directions. Although both income statements are incorrect, the balance sheet as of the end of 2012 is properly stated. The accurate inventory count at year-end corrected the

**FIGURE 7-5**  
Inventory errors

**Cost of Goods Sold Calculation:**

<b>Cost of goods sold</b>	=	<b>Beginning inventory</b>	+	<b>Purchases</b>	-	<b>Ending inventory</b>
2011: \$220	=	\$0	+	\$500	-	\$280
2012: \$680	=	\$280	+	\$600	-	\$200

**FIGURE 7-6**  
Comparative  
income  
statements:  
Rainier  
Corporation

	Accurate	Error
<b>2011</b>		
Sales	\$ 600	\$ 600
Cost of goods sold	200	220
Net income	<u>\$ 400</u>	<u>\$ 380</u>
<b>2012</b>		
Sales	\$2,100	\$2,100
Cost of goods sold	700	680
Net income	<u>\$1,400</u>	<u>\$1,420</u>

inventory balance, and the \$20 understatement of retained earnings due to understated net income in 2011 was counterbalanced by a \$20 overstatement to net income in 2012.

Inventory errors are not unusual and at times can be quite significant. For example, the auditor for Comnet Corp., a computer software and health care products company, discovered that management had unintentionally overvalued inventories by \$1.6 million on the company's financial statements. Consequently, Comnet's reported net income of \$2.6 million was reduced to \$1.0 million, and net income the following year was \$1.6 million larger.

An article in the *Wall Street Journal* titled "Inventory Chicanery Tempts More Firms, Fools More Auditors" reported that "when companies are desperate to stay afloat, inventory fraud is the easiest way to produce instant profits and dress up the balance sheet . . . [and] the recent rise in inventory fraud is one of the biggest single reasons for the proliferation of accounting scandals." The article described how inventory frauds at Comptronix Corp., an Alabama electronics company, Larabee Wire Manufacturing, L.A. Gear, and the discount drugstore Phar-Mor were perpetrated simply by management creating fictitious inventories—undetected by the external auditor—that instantly increased profits. "Experts say that many companies overvalue obsolete goods and supplies. Others create phantom items in the warehouse to augment the assets needed for loan collateral. Still others count inventory that they pretend they have ordered but that will never arrive . . . [in these cases] the auditor was either taken or missed the obvious."



In its 2008 annual report, The Gap reported ending inventory and net income of \$1,506 million and \$967 million, respectively. If The Gap had incorrectly counted its ending inventory at \$1,700 million, what would have been its 2008 net income? (Do not account for income taxes.)

## SELLING INVENTORY: WHICH COST FLOW ASSUMPTION?

Perhaps the most important and difficult question of inventory accounting involves how to allocate the capitalized inventory cost between the cost of goods sold and ending inventory. The examples so far have assumed that the cost of the sold inventory is known, but such situations are relatively unusual. In most cases, companies are unable to determine exactly which items are sold and which items remain in ending inventory. When this occurs, an assumption must be made about the cost flow of the inventory items. The assumption chosen can significantly affect net income, current assets, working capital, and the current ratio because it determines the relative costs allocated to the cost of goods sold and ending inventory.

This section first discusses the specific identification method, which is used when the cost of the sold inventory items can be determined. We then cover three cost flow assumptions that are used extensively in practice: averaging; first-in, first-out (FIFO); and last-in, first-out (LIFO).



Under IFRS, the last-in, first-out (LIFO) inventory cost flow assumption is prohibited. The cost of inventory generally is determined using the first-in, first-out (FIFO) or averaging assumption.

### Specific Identification

In some cases, especially with relatively infrequent sales of large-ticket items (e.g., jewelry, furniture, automobiles, land), it is possible to specifically identify which inventory items have been sold and which remain. In such situations, the allocation of inventory cost between the cost of goods sold and ending inventory is relatively straightforward. Suppose, for example, that on March 1, Used Cars & Co. had three 2011 Honda Accords for sale. Cars 1 and 2 were purchased from the same dealer at a cost of \$10,000 each. Car 3 was purchased recently at an auction for \$12,000. The three cars are in comparable condition, and the selling price for each is \$18,000. The March 1 inventory for Used Cars & Co. follows:

Car	Cost
1	\$10,000
2	10,000
3	12,000
<b>Total</b>	<b>\$32,000</b>

Assume that on March 15, Sammy Sportsman agrees to purchase any one of the three cars for \$18,000. Used Cars gives Sammy Car 3 (cost = \$12,000), and the following journal entries are recorded:

Cash (+A)	18,000	
Sales (R, +RE)		18,000
<i>Sold Honda</i>		
Cost of Goods Sold (E, -RE)	12,000	
Inventory (-A)		12,000
<i>Recognized cost of goods sold for Honda with cost of \$12,000</i>		

It is fairly clear in this situation that \$12,000 should have been allocated to cost of goods sold and \$20,000 should remain in ending inventory. An inventory item (Car 3) with a cost of \$12,000 was sold. Thus, the specific identification procedure is a relatively straightforward way to determine the cost of goods sold and ending inventory. Nonetheless, it does have limitations.

First, the **specific identification** procedure requires the tracking of specific inventory items, which can be difficult for some firms. A second limitation is that in many cases specific identification allows a manager to manipulate net income and the ending inventory value. Suppose in the example that the manager of Used Cars & Co. chose to give Sammy Sportsman either Car 1 or Car 2, instead of Car 3. Recall that Sammy was indifferent toward choosing among the three automobiles. In this situation, the following journal entries would have been recorded:

<b>Cash (+A)</b>	<b>18,000</b>	
<b>Sales (R, +RE)</b>		<b>18,000</b>
<i>Sold Honda</i>		
<b>Cost of Goods Sold (E, -RE)</b>	<b>10,000</b>	
<b>Inventory (-A)</b>		<b>10,000</b>
<i>Recognized cost of goods sold for Honda with cost of \$10,000</i>		

The decision to give Sammy Car 1 or Car 2 would have produced net income and ending inventory values that were \$2,000 (\$12,000 - \$10,000) greater than the decision to give Sammy Car 3. The specific identification procedure allowed the manager to manipulate income and inventory by choosing which inventory item to deliver to the customer. While manipulating the financial statement in this way is not a misrepresentation, it does allow management to influence the timing of income recognition.



Several years ago Amazon.com dropped the specific identification method in favor of the first-in, first-out (FIFO) inventory cost flow assumption. Explain why a growing company, like Amazon, might make such a change.

### Three Inventory Cost Flow Assumptions: Average, FIFO, and LIFO

The inventories of many companies are acquired at so many different prices that it is often difficult to identify specifically the costs of the items sold and the costs of the items in ending inventory. In such cases, an assumption must be invoked.

To illustrate and compare the three different cost flow assumptions, consider the following example. The chart in Figure 7-7 provides information about the inventory purchases and sales for Discount Sales Company over a two-year period. Following this information are inventory T-accounts that track the information under three different cost-flow assumptions: average, first-in, first-out (FIFO), and last-in, first-out (LIFO).

Note in Figure 7-7 that inventory costs are increasing across time. The cost of the beginning inventory is \$4 per unit; purchase costs in year 1 are \$7 per unit; and purchase costs in year 2 are \$8 per unit. Note also that the inventory purchases in years 1 and 2 are recorded in the same way across all three assumptions: \$70 and \$40 in years 1 and 2, respectively. The differences in the assumptions relate to the different dollar amounts attached to cost of goods sold (COGS) when the outflow of the sold inventory is recorded.

**FIGURE 7-7**  
Inventory flow  
assumptions:  
Average, FIFO,  
and LIFO

**Given Information:**

Description	Units	Unit Cost	Total
Beginning inventory	3	\$4	\$12

**Year 1**

Purchases	10	\$7	\$70
Sales	(8)		
Ending inventory	5		

**Year 2**

Beginning inventory	5		
Purchases	5	\$8	\$40
Sales	(8)		
Ending inventory	2		

**Inventory (Average Assumption)**

Year 1:	Beginning inventory	12		
	Purchases	70		
			COGS (8u × \$6.31 <sup>1</sup> )	50
Year 2:	Ending inventory	32		
	Purchases	40		
			COGS (8u × \$7.20 <sup>2</sup> )	58
	Ending inventory	14		

**Inventory (FIFO Assumption)**

Year 1:	Beginning inventory	12		
	Purchases	70		
			COGS	47 <sup>3</sup>
Year 2:	Ending inventory	35		
	Purchases	40		
			COGS	59 <sup>4</sup>
	Ending inventory	16		

**Inventory (LIFO Assumption)**

Year 1:	Beginning inventory	12		
	Purchases	70		
			COGS	56 <sup>5</sup>
Year 2:	Ending inventory	26		
	Purchases	40		
			COGS	58 <sup>6</sup>
	Ending inventory	8		

<sup>1</sup> 3u × \$4 = \$12

$$\frac{10u \times \$7}{13u} = \frac{70}{\$82}$$

$$\$6.31 = \$82/13u$$

<sup>2</sup> 5u × \$6.31 = \$32

$$\frac{5u \times \$8.00}{10u} = \frac{40}{\$72}$$

$$\$7.20 = \$72/10u$$

<sup>3</sup> (3u × \$4) + (5u × \$7)

<sup>4</sup> (5u × \$7) + (3u × \$8)

<sup>5</sup> 8u × \$7

<sup>6</sup> (5u × \$8) + (2u × \$7) + (1u × \$4)

Under the **average assumption**, a weighted average cost of the units available for sale is computed at the time of the sale. For example, at the time of the sale in year 1, 13 units were available for sale—3 units @ \$4 and 10 units @ \$7, a weighted average (as illustrated in Figure 7–7, footnote 1) of \$6.31. This amount is multiplied times the number of units sold (8) to compute both COGS and the reduction in the inventory account. The same procedure is followed in year 2, but note that the weighted average as of the date of the sale is different; it has risen to \$7.20 per unit because the inventory purchase costs have risen.

Under the **first-in, first-out (FIFO) assumption**, the oldest available inventory costs are used to compute COGS. In year 1, it was assumed that 3 of the 8 units sold were from the beginning inventory (\$4 per unit), while the remaining 5 units were from the purchase in year 1 (\$7 per unit)—leaving an ending inventory (\$35) composed of 5 units @ \$7 per unit. In year 2, 5 of the 8 units were assumed to have come from the remaining 5 units purchased in year 1 (\$7 per unit), while the remaining 3 units came from the year 2 purchase (\$8 per unit). The \$16 ending inventory is composed of 2 units @ \$8 per unit, all from the year 2 purchase—the most current inventory costs.

Under the **last-in, first-out (LIFO) assumption**, the most current inventory costs are used to compute COGS. In year 1, it was assumed that all 8 units sold had a cost of \$7, the most current purchase cost, leaving an ending inventory (\$26) composed of 2 units @ \$7 and 3 units @ \$4 per unit. In year 2, the 8 units sold were assumed to have come from three groups: 5 units from the most current (year 2) purchase, 2 units from the remaining units purchased in year 1 (\$7 per unit), and 1 unit from beginning inventory (\$4 per unit). Year 2's ending inventory under LIFO (\$8) is 2 units @ \$4 per unit—inventory costs from before year 1.

### Inventory Cost Flow Assumptions: Effects on the Financial Statements

Figure 7–8 compares the FIFO, average, and LIFO cost flow assumptions with respect to COGS, gross profit, and ending inventory for years 1 and 2. Assume that Discount Sales Company sold its inventory for \$10 per unit in both years 1 and 2.

Refer first to year 1. FIFO gives rise to the largest gross profit (\$33), and ending inventory (\$35) while LIFO produces the lowest gross profit (\$24) and ending inventory (\$26). These differences arise because inventory costs are rising and LIFO uses the most current (highest) costs in computing COGS and allocates the oldest (lowest) costs to ending inventory. In general, in times of rising inventory costs, FIFO will give rise to higher net income and inventory numbers than LIFO. These differences reverse in periods when inventory costs decrease. The average assumption creates dollar values between FIFO and LIFO in either case. In times of increasing inventory costs,

**FIGURE 7–8**  
Financial  
statement effects  
of the three  
inventory cost-  
flow assumptions

	FIFO	Average	LIFO
<b>YEAR 1:</b>			
Sales	\$80	\$80	\$80
COGS	(47)	(50)	(56)
Gross profit	33	30	24
Ending inventory	35	32	26
<b>YEAR 2:</b>			
Sales	\$80	\$80	\$80
COGS	(59)	(58)	(58)
Gross profit	21	22	22
Ending inventory	16	14	8

using the FIFO assumption can boost important financial ratios, such as return on equity, earnings per share, working capital, and the current ratio. Choosing LIFO, on the other hand, may value inventories at unrealistically low levels.



Walgreen's uses the LIFO assumption for inventories. Inventory on the 2008 balance sheet was reported as \$6.8 billion. Had the company used the FIFO assumption, ending inventory would have been \$1.2 billion higher. Explain why ending inventory can be so different under two acceptable assumptions.

In year 2 the situation is different. LIFO's COGS (\$58) is actually less than FIFO's (\$59), which means that gross profit is higher for LIFO (\$22) than FIFO (\$21) even though inventory costs increased. While this result seems inconsistent with year 1, it occurs because during year 2 Discount Company sold more inventory items than it purchased, liquidating some of its inventory balance. The company began the year with 5 units and ended with only 2. This liquidation caused the LIFO assumption to "dip into old (low-cost) layers of inventory" in the calculation of COGS. Note in Figure 7-7, for example, that COGS under LIFO included 2 units from year 1 (\$7 per unit) and 1 unit from inventory prior to year 1 (\$4 per unit). The boost to profit associated with dipping into old inventory costs is called a **LIFO liquidation**.

### Inventory Cost Flow Assumptions: Effects on Federal Income Taxes

As the previous example shows, if inventory costs and units are increasing, using the LIFO assumption gives rise to the lowest net income amount. During inflationary times, therefore, the LIFO assumption is an attractive alternative for determining a company's federal income tax liability, which is computed as a percentage of taxable income; less taxable income means less federal income tax liability.

Federal income tax law states that if a company uses the LIFO assumption for computing its tax liability, it must also use the LIFO assumption for preparing its financial statements. If a company uses a cost flow assumption other than LIFO for tax purposes, it can use the LIFO, averaging, or FIFO assumption for financial reporting. This regulation is called the **LIFO conformity rule**, and it causes most companies to use the same cost flow assumption for both income tax and financial reporting purposes. Companies that choose LIFO for tax purposes must use it for reporting purposes. Companies that want to use FIFO for reporting purposes may not use LIFO for tax purposes.

Figure 7-9 shows the effects of the different cost flow assumptions on federal income taxes. The comparison uses the numbers from Figure 7-8 (year 1), except that expenses of \$10 are assumed for all cases and federal income taxes have been assessed

**FIGURE 7-9**  
Income tax effects of the three inventory cost flow assumptions

	FIFO	Averaging	LIFO
Sales (35 units × \$15)	\$80	\$80	\$80
Cost of goods sold	47	50	56
Gross profit	\$33	\$30	\$24
Expenses	10	10	10
Net income before taxes	\$23	\$20	\$14
Federal income taxes (34%)	8	7	5
Net income after taxes	\$17	\$13	\$9



as a percentage (34 percent) of net income before taxes and are listed as an expense on the income statement.

Note in Figure 7–9 that, in times of rising inventory costs, if a company chooses to minimize its federal income taxes by using the LIFO assumption, it must report lower net income and inventory on its financial statements. The effects on the financial statements of using LIFO can be significant. For example, as of December 31, 2008, the inventories of General Electric, a LIFO user, were valued at about \$706 million less than they would be under FIFO. In another example, DuPont reduced its current assets and reported net income by \$612 million when it changed from FIFO to LIFO. However, companies using the FIFO assumption to boost reported net income and ending inventory must pay additional federal income taxes. These additional tax payments can be very significant.



Earlier we mentioned that Walgreen's 2008 inventory balance under LIFO was \$1.2 billion lower than it would have been under FIFO. Estimate how many dollars in taxes Walgreen's has saved by using LIFO instead of FIFO. Assume a 30 percent income tax rate.

### Choosing an Inventory Cost Flow Assumption: Trade-Offs

Most companies find it impractical to specifically identify the inventory items sold during a given period. Management must therefore choose from among the three assumptions discussed above. *Accounting Trends and Techniques* (2009) reports that of the major U.S. companies surveyed, 36 percent used LIFO, 65 percent used FIFO, and 29 percent used averaging for at least some of their inventories. Most of these companies used different methods for different kinds of inventory. Of those using LIFO, only 4 percent use it for all inventories, but 52 percent used it for over half of their inventories. One of the primary reasons that large U.S. LIFO users use other assumptions as well is that they own non-U.S. subsidiaries that use IFRS, which does not allow LIFO. The choice of a cost flow assumption is a difficult problem that depends on the situation faced by a given company.

Before considering the trade-offs involved in choosing an inventory cost flow assumption, remember that the assumption does not necessarily reflect the actual movement of the inventory. In fact, there is often no relationship between the assumption used to value the inventory for reporting purposes and the actual cost of the inventory on hand. Choosing a cost flow assumption is largely independent of the nature of the inventory itself.

It is also difficult to change a cost flow assumption once it has been chosen. As discussed in Chapter 3, the principle of consistency requires that accounting methods be consistent from year to year, and such changes, even when approved by an auditor, must be fully described in the footnotes, and prior years' financial statements must be restated. Recently, only a few major U.S. companies have changed their inventory cost flow assumptions.

The trade-offs involved in choosing an inventory cost flow assumption are divided into two categories: (1) income and asset measurement and (2) economic consequences. *Income and asset measurement* refers to how well each assumption produces measures that reflect the actual performance and financial condition of a company. *Economic consequences* refer to the costs and benefits associated with using a particular assumption.

#### INCOME AND ASSET MEASUREMENT

In terms of income and asset measurement, most believe that FIFO is preferred. FIFO produces a more current measure of inventory on the balance sheet. Ending inventory

under FIFO reflects the costs of the most recent purchases; LIFO reports ending inventory in terms of older, less relevant costs. Using LIFO over a period of time, therefore, can give rise to ending inventory costs that are grossly outdated. Union Carbide's net worth (assets – liabilities), for example, was at one time understated by about 18 percent simply because it used LIFO, and the *inventory turnover* (cost of goods sold ÷ inventory) of Monsanto, another LIFO user, was overstated by approximately 50 percent.

The LIFO assumption is a better application of the matching principle because it allocates the most current purchase costs to cost of goods sold, where they are matched against current sales in the determination of net income. However, this LIFO advantage is normally relatively small because it is measured only over a single year. For example, DuPont's 2008 LIFO-based inventory was approximately \$1 billion below its current cost. LIFO-based earnings, on the other hand, were only \$200 million below FIFO-based earnings.

### ECONOMIC CONSEQUENCES

The economic consequences of choosing an inventory flow assumption relate to such factors as income taxes and liquidity problems, bookkeeping costs, LIFO liquidations and purchasing practices, debt and compensation contracts, and the capital market.

**INCOME TAXES AND LIQUIDITY.** Often the most important economic consideration when choosing an inventory cost flow assumption is the tax consequence. When inventory costs are rising, LIFO yields a lower net income number than FIFO, resulting in a lower tax liability. Consequently, choosing LIFO can improve a company's cash flow by minimizing cash payments for income taxes. As mentioned earlier, the magnitude of such savings can be significant.



The fact that LIFO is not allowed under IFRS raises an important potential impediment to the adoption of IFRS in the United States. Most LIFO users in the U.S. have chosen LIFO because it results in an income tax savings that has accumulated over many years. DuPont, for example, has saved over \$150 million in income taxes because it uses LIFO. A shift to IFRS in the absence of any changes in the U.S. tax law could impose a huge and immediate tax burden on LIFO users in the U.S.

Using FIFO can create liquidity problems. In times of rising prices, FIFO produces higher income than LIFO because it matches relatively old costs against current revenues. Because old costs are lower than current costs, FIFO creates **paper profits**, profits that are due to rising inventory costs instead of efficient operations. Paper profits appear on the income statement, but they are not backed by cash inflows. Unfortunately, these inflated profits are also used to determine a company's tax liability, which must be paid in cash. As a result, operating cash inflows may not be sufficient to cover the required cash outflows, and the company's liquidity position suffers.



In the early 1970s, the United States experienced a dramatic economic downturn and double-digit inflation. In one year alone, over 400 companies, most with cash flow problems, switched from FIFO to LIFO. Explain why so many companies would make such a shift.

**BOOKKEEPING COSTS.** While LIFO usually brings about a lower tax liability than FIFO, it requires more bookkeeping procedures and is generally more costly to implement. For example, one survey of FIFO users found that many companies did not adopt LIFO because the record-keeping requirements of LIFO were burdensome and costly. Indeed, short-cut methods for estimating LIFO have been devised to reduce the costs of maintaining LIFO records.

**LIFO LIQUIDATION AND INVENTORY PURCHASING PRACTICES.** As illustrated earlier, the use of LIFO can boost net income amounts when inventory levels are cut back. Consider, for example, Atlantic Richfield, a giant in the oil industry and a long-time LIFO user. In the early 1980s, the dollar amount in the company's inventory balance consisted of costs that were very old, extremely low, and outdated. Then an oil glut occurred, and the market price of oil decreased sharply. In response, Atlantic Richfield and a number of other oil companies cut inventory levels significantly. This action caused the low and outdated costs in inventory to be matched against Atlantic Richfield's current revenues. The result was a \$105 million increase in the company's profits. That same year, the profits of Gulf Oil, Standard Oil of California, and Texaco, other LIFO users, were inflated for the same reasons, by \$200 million, \$165 million, and \$315 million, respectively. Unfortunately, these high profits were due to the liquidation of LIFO inventories, not the effective and efficient operations of the oil companies or the condition of the oil industry, which at the time was suffering. Moreover, additional income taxes had to be paid on these profits.

Many LIFO users allow such inventory liquidations to occur, but other companies intentionally avoid them by maintaining their inventory purchases to prevent their inventory levels from diminishing. Such a practice avoids increased taxes, but at the same time, it can give rise to other problems. It may not be the appropriate time to purchase inventory. Inventory costs may be at a seasonal high, for example, or significant discounts may not be available. Furthermore, such action does nothing to solve the problem associated with LIFO's understated inventory valuation; it merely postpones a problem that grows worse with each passing year.



Ford Motor Company, a major automobile manufacturer, reported in its 2008 annual report that the reduction of its LIFO inventory quantities increased pretax net income by \$209 million. Explain how reducing inventory could increase income. As an analyst, why would you be interested in such a disclosure?

**DEBT AND COMPENSATION CONTRACTS.** FIFO may be attractive to management because, when inventory costs are rising, FIFO produces higher reported net income and higher inventory values than LIFO. Compensation paid to management expressed as a percentage of FIFO income tends to be higher than compensation based on LIFO income. In addition, debt covenants using ratios based on FIFO will impose less restrictive constraints on managers than those based on LIFO.

The relative effects of LIFO and FIFO on the financial statements are reversed when prices are decreasing. For example, the annual report of May Department Stores once noted: "We value our department store inventories using the LIFO (last-in, first-out) method. Usually, this decreases earnings . . . [however, in the current year] we experienced deflation, which resulted in a pretax LIFO credit [earnings increase] of \$46 million."

**THE CAPITAL MARKET.** Management may also choose FIFO over LIFO because it believes that FIFO's higher net income and inventory amounts are valued more highly

by investors and creditors in the capital market. They reason that using FIFO could improve the company's credit rating, which may lead to better terms on its borrowings and higher prices for its outstanding debt securities. Some believe that FIFO may also bring about higher prices for the company's outstanding equity securities. For example, in the survey mentioned earlier, when asked why the company did not use LIFO, one manager responded that using LIFO would depress the market price of its stock. If such assertions are correct, using FIFO would make it easier to raise capital as well as increase management's value in the managerial labor market.

The validity of this reasoning is open to question. A number of research studies in accounting suggest that the stock market "looks through" a company's accounting methods and values the company on the basis of the underlying cash flows. Since using LIFO usually saves taxes, these studies suggest that companies using LIFO are more highly valued by the stock market than companies using FIFO. However, the evidence is mixed, and all such conclusions are still tentative.

Under U.S. GAAP, companies using LIFO are required to report in the footnotes to the financial statements what the value of their inventories would be if they used FIFO. Also, they are required to report the income effects of any LIFO liquidations during the year.

General Motors reported the following information in Note 11 (Inventories) of its 2006 annual report (dollars in millions).

	2006	2005
Productive material, work in process, and supplies	\$ 5,810	\$ 5,512
Finished product, service parts, etc.	<u>9,804</u>	<u>10,378</u>
Total inventories at FIFO cost	15,614	15,890
Less LIFO allowance	<u>(1,508)</u>	<u>(1,525)</u>
Total	<u>\$14,106</u>	<u>\$14,365</u>

Inventories are stated at cost, which is not in excess of market. The cost of approximately 52 percent of U.S. inventories is determined by the last-in, first-out (LIFO) method. The cost of all other inventories is determined by either the first-in, first-out (FIFO) or average cost method.

During 2006 and 2005, U.S. LIFO inventory quantities were reduced. This reduction resulted in a liquidation of LIFO inventory quantities carried at lower costs prevailing in prior years as compared with the cost of 2006 and 2005 purchases, the effect of which decreased cost of goods sold by approximately \$50 million in 2006 and \$100 million in 2005, pre-tax.

What is the LIFO allowance, and why did the liquidation of LIFO inventory quantities reduce cost of goods sold?

**THE LIFO RESERVE: A USER PERSPECTIVE.** The footnotes to the 2008 financial statements of U.S. Steel Corporation (USS) stated, "Current acquisition costs were estimated to exceed (reported) inventory values at December 31 by approximately \$1.1 billion in 2008 and \$910 million in 2007." These dollar amounts are often referred to as **LIFO reserves**, and they provide useful information. For example, they enable users to compute the following for USS:

1. Inventory value under the FIFO assumption. USS reported LIFO inventory of \$2,492 million as of December 31, 2008. Refer to the calculation below to see USS's

2008 inventory value if it used FIFO (dollars in millions). This calculation can help users compare the financial performance and condition of USS to that of other FIFO users.

$$\begin{array}{r r r r r} \text{2008 Inventory (LIFO)} & + & \text{2008 LIFO Reserve} & = & \text{2008 Inventory (FIFO)} \\ \$2,492 & + & \$1,100 & = & \$3,592 \end{array}$$

2. Net income and the additional tax liability if the company switched from LIFO to FIFO in 2008. Multiplying the reserve by the company's effective tax rate (which can be found in the footnotes) provides an estimate of the additional tax liability associated with changing from LIFO to FIFO in 2008 (dollars in millions):

$$\begin{array}{r r r r r} \text{2008 LIFO Reserve} & \times & \text{Effective Tax Rate} & = & \text{Additional 2008 Tax} \\ \$1,100 & \times & 0.28 & = & \$308 \end{array}$$

Such a change would result in recognizing the firm's oldest (and lowest) inventory cost in the 2008 cost of goods sold, thereby increasing taxable income and the associated tax liability. This calculation shows that USS would have paid additional taxes of \$308 million if it had chosen to switch to FIFO in 2008. Another way to interpret this calculation is that it represents an estimate of the taxes saved by USS from the time it adopted LIFO to the present, assuming constant tax rates.



Assume that at the end of 2008 U.S. corporations were required to adopt IFRS, which does not allow LIFO, forcing U.S. Steel Corporation (USS) to immediately change from LIFO to FIFO. Do you think that USS would support such a requirement? Why?

3. FIFO net income in 2008 if the company had switched to FIFO in a prior year. An estimate of net income reported by USS if it had switched to FIFO in a prior year can be derived from multiplying the change in the LIFO reserve (from 2007 to 2008) by 1 minus the effective tax rate, and then adding that amount to net income reported under LIFO. Like the first calculation above, this calculation—provided below (dollars in millions)—can help users compare the financial performance and condition of USS to that of other FIFO users.

$$\begin{array}{r r r r r} \text{2008 Net Income (LIFO)} & + & \text{Increase in LIFO Reserve} & = & \text{2008 Net Income (FIFO)} \\ & & \times \text{Effective Tax Rate} & & \\ \$2,112 & + & [(\$1,100 - \$910) \times (1 - 0.28)] & = & \$2,249 \end{array}$$

## ENDING INVENTORY: APPLYING THE LOWER-OF-COST-OR-MARKET RULE

The inventory cost flow assumption determines the capitalized cost allocated to ending inventory. However, inventories on the balance sheet are not necessarily carried at this dollar amount. Based on conservatism, ending inventory is valued at cost or market value, whichever is lower.

Applying the lower-of-cost-or-market rule to ending inventory is accomplished by comparing the cost allocated to ending inventory with the market value of the inventory. If the market value exceeds the cost, no adjustment is made and the inventory remains at cost. If the market value is less than the cost, the inventories are written down to market value with an adjusting journal entry.



U.S. GAAP and IFRS use different market values when applying the lower-of-cost-or-market rule. Under U.S. GAAP, the market value is normally the replacement cost, the cost of replacing the inventory. Under IFRS, the market value is normally the realizable value, the amount at which the inventory could be sold.

Suppose, for example, that ABC Enterprises uses the FIFO assumption, which gives rise to an ending inventory of \$100. If the market value of the inventory is \$150, no adjusting journal entry need be recorded. The ending inventory remains at cost because cost (\$100) is lower than market value (\$150). If the market value of the inventories is \$80, however, the inventory would have to be written down (reduced) from \$100 to \$80. The following journal entry represents one way of recording such a write-down:

<b>Loss on Inventory Write-Down (Lo, -RE)</b>	<b>20</b>	
<b>Inventory (-A)</b>		<b>20</b>
<i>Wrote down inventory to market value (\$100 - \$80)</i>		

Inventory write-downs are fairly common and sometimes quite large. In a recent financial report, for example, Alcoa reported a write-down of approximately \$213 million, while that same year Gerber Products Company recorded a \$2.9 million charge to write down certain inventories to market value.




Under U.S. GAAP, inventory write-downs are considered permanent, meaning that they are not reversed even in cases when the market value of the written-down inventory rebounds. Under IFRS, on the other hand, if the market value of written-down inventory increases, an **inventory recovery** is recorded (i.e., the inventory is written up to the point of the original cost) and earnings are increased. This difference illustrates a case where IFRS treatment attempts to reflect the market values of assets more so than U.S. GAAP treatment.

## THE LOWER-OF-COST-OR-MARKET RULE AND HIDDEN RESERVES

The lower-of-cost-or-market rule is often criticized because it treats inventory price changes inconsistently. Price decreases, based on difficult-to-determine market values, are recognized immediately, while price increases are not recognized until the inventory is sold in an objective and verifiable transaction. This conservative, but inconsistent, treatment can create “hidden reserves” that managers can use to manipulate income.

Consider a company that is just about to complete a very good year. Reported earnings are expected to be so high that management is seeking to reduce income and perhaps move some of the earnings to future periods that may be less successful. One way to execute this “income smoothing” strategy is to write down inventory in the current year and sell it in a future period. Suppose, for example, that management chooses to write down an inventory item with an original cost of \$10 to its subjectively determined market value of \$8. A \$2 loss is immediately recognized, reducing the current year’s net income. Assume further that during the following year, the inventory item is sold for \$12, giving rise to a book gain that increases that year’s net income by \$4 (\$12 - \$8). Note that by writing down the inventory in the first year, management was able to transfer \$2 of net income from the first to the second year. A “hidden reserve” was created by the write-down, which was realized in a subsequent period.

Certainly, the conservative and inconsistent nature of the lower-of-cost-or-market rule, combined with subjective inventory write-downs, can create “hidden reserves” that can be used to manage the reported values on the financial statements. However, it is important to keep in mind that conservative accounting is a response to the liability faced by those who must provide and audit financial statements. The potential costs to these parties associated with understating inventories and profits are typically less than those associated with overstating them. From an economic standpoint, therefore, the lower-of-cost-or-market rule may be justifiable, even though it produces questionable measures on the financial statements. In any event, investors, creditors, managers, auditors, and other interested parties must be aware of these weaknesses.



Olympic Steel, stock symbol ZEUS, announced early in April 2009 that it would record a \$30 million charge to reduce the carrying cost of its inventory to market prices. The company had seen a 43 percent decline in its shipments during the 2008–2009 recession, and adjusted its inventory to reflect current market conditions. The \$30 million expense represented approximately 12 percent of the value of the inventory on its March 31 balance sheet, and appeared in the operating section of the company’s statement of cash flows as an add-back to net earnings in the calculation of net cash from operations. Why would a weak market for steel and related products affect the inventory on the balance sheet of a company like Olympic Steel, and why would the write-down appear as both an expense on the income statement and an add-back on the statement of cash flows?

## INTERNATIONAL PERSPECTIVE: JAPANESE BUSINESS AND INVENTORY ACCOUNTING

We have commented several times in this text that knowledge of the business environment and practices in individual countries is important for understanding the financial statements used in those countries. The situation in Japan with respect to inventories provides an interesting example. Japan has a long history of what might loosely be described in the United States as “corporate groups.” Typically, such groups are made up of a number of different entities, many of which perform different functions and hold equity interest in the others. The board of directors of each company is normally composed of representatives from each of the member entities. Mitsubishi, Sanwa, Nippon Steel, Hitachi, Nissan, and Toyota are all organized in such interlocking networks.

This group orientation, which is not evident in the United States, offers a number of significant advantages, most of which relate to planning and coordination among the group members. In most cases, for example, the presidents of the group companies hold meetings periodically to promote coordination and mutual understanding and to eliminate overlap in the activities conducted by the membership. These groups are then better able to share business risks, and when a company within a group faces difficulties, other group members pursue various means to assist it.

In many situations, such as in the Japanese auto and electronics industries, the group network contains both the manufacturer and its main suppliers. Proper coordination and planning among these parties can help to minimize material and product inventories as well as lead time and delivery items, giving rise to lower inventory carrying cost and better customer service. Just-in-time (JIT) inventory systems, which reduce the costs of carrying large amounts of inventory without jeopardizing customer service,

have long been a characteristic of this Japanese system and have given the Japanese a definite advantage when competing against U.S. industry.



The popularity and success of just-in-time inventory methods are often credited to Toyota, the Japanese car manufacturer. Companies following a JIT plan minimize their investment in idle inventory, purchasing inventory only as it is needed for production. Nick Koletic, an economics specialist at UCLA, published an article in *Inventory Management Review* (10/17/2005) that cited some risks associated with JIT inventory practices. In early 2010, Toyota suffered a quality control problem with accelerator pedals in many of its popular brands, leading to a massive recall; at the same time, Toyota's popular hybrid car, the Prius, faced problems with its brake system. Discuss what business risks a company, such as Toyota, takes when it minimizes the inventory it keeps on hand.

The implication for financial reporting is that Japanese manufacturers, in general, carry much lower levels of inventory that turn over at much higher rates than those in the United States. This difference decreases the importance of inventory accounting in Japan, making the effects on the financial statements of choosing among the various cost flow assumptions relatively insignificant. Consequently, unlike U.S. companies, which normally choose FIFO or LIFO for some significant economic reason, most companies in Japan use the averaging method. Furthermore, Japan has adopted international financial reporting standards (IFRS), which does not allow the use of LIFO.

## ROE EXERCISE: MANAGEMENT OF INVENTORY AND RETURN ON EQUITY

The ROE model, introduced and illustrated in Appendix 5A, provides a framework linking the management of a company's operating, investing, and financing activities to its return on the shareholders' investment (return on equity). The management of inventory plays an important role in the ROE model primarily through the inventory turnover ratio. Recall as well that inventory is a current asset, so inventory management also influences working capital and the current ratio, discussed in Chapter 6.

### Inventory Turnover

Inventory turnover ( $\text{cost of goods sold} \div \text{average inventory}$ ) provides a measure of the level of a company's investment in its inventories. For retailers, adequate inventory levels must be maintained to properly service retail customers; for manufacturers, adequate levels of raw materials, work in process, and finished goods must be maintained to support the manufacturing process. Yet, inventories must be financed at a cost and they take up costly space, indicating that carrying overly high levels of inventories is not in the best interest of the shareholders. In terms of the ROE model, inventory turnover is a component of total asset turnover, meaning that changes in inventory turnover are reflected in changes in asset turnover, which in turn are reflected in return on assets (ROA), which in turn are reflected in return on equity (ROE). Thus, increasing inventory turnover (decreasing the investment in inventory relative to cost of goods sold) puts upward pressure on both ROA and ROE.



## ROE Analysis

Access the Web site (<http://www.wiley.com/college/pratt>), and conduct ROE analyses on Borders versus Amazon, Barnes and Noble versus Borders, or Nordstrom versus Saks, all of which carry substantial investments in inventory, paying special attention to how the companies' inventory turnover impacts ROE.

## REVIEW PROBLEM

On December 1, Jane Lee contributed \$1,000 of her own funds to begin an Oriental grocery store that sells white rice. The rice is kept in a large bin, and customers help themselves by filling plastic bags with a large scoop. The transactions described in Figure 7–10 took place during December. Assume that Jane incurred cash expenses (excluding the cost of goods sold and inventory shortages) of \$400 during December, and she pays income taxes at a rate of 30 percent of net income before taxes on December 31.

Jane purchased rice on two occasions at two different prices. By multiplying the number of pounds purchased by the cost per pound, the total capitalized inventory cost for January can be computed (\$510). Three hundred pounds of rice were sold for a price of \$5/lb., creating total sales of \$1,500 (300 lb.  $\times$  \$5).

**FIGURE 7-10**  
December  
transactions for  
JL Oriental Foods

Date	Description	Total Inventory Cost
Dec. 1	Jane Lee, owner, contributed \$1,000.	
7	Purchased 300 pounds of rice for \$1.00 per pound.	\$300
25	Sold 250 pounds of rice for \$5.00 per pound.	
27	Purchased 150 pounds of rice for \$1.40 per pound.	210
28	Sold 50 pounds of rice for \$5.00 per pound.	
29	Paid cash expenses of \$400.	
31	Paid income tax liability.	
	<b>Total capitalized inventory cost</b>	<u><u>\$510</u></u>

**FIGURE 7-11**  
FIFO assumption

JL Oriental Foods Income Statement for the Month Ended December 31, 2011	
Sales (300 lb $\times$ \$5)	\$1,500
Cost of goods sold	<u>300<sup>a</sup></u>
Gross profit	\$1,200
Expenses	400
Loss	<u>14<sup>b</sup></u>
Net income before taxes	\$ 786
Income tax expense (\$790 $\times$ 0.30)	<u>236</u>
Net income after taxes	<u><u>\$ 550</u></u>

<sup>a</sup>(250 lb  $\times$  \$1) + (50 lbs  $\times$  \$1)  
<sup>b</sup>10 lb  $\times$  \$1.40

FIGURE 7-11

(Continued)

**JL Oriental Foods  
Balance Sheet  
December 31, 2011**

Cash	\$1,354 <sup>a</sup>
Inventory	<u>196<sup>b</sup></u>
<b>Total assets</b>	<b><u>\$1,550</u></b>
<b>Contributed capital</b>	<b>\$1,000</b>
<b>Retained earnings</b>	<b><u>550</u></b>
<b>Total liabilities and shareholders' equity</b>	<b><u>\$1,550</u></b>

<sup>a</sup>Capital contribution – Purchases + Sales – Expenses – Taxes  
 \$1,000 – (\$300 + \$210) + \$1,500 – \$400 – \$236

<sup>b</sup>140 lb × \$1.40  
 (150 lb × \$1.40) – (10 lb × \$1.40)

Assume that Jane took inventory (i.e., weighed the rice) on December 31 and noted that there were 140 pounds of rice on hand. Figures 7-11 and 7-12 contain the income statements and balance sheets prepared by JL Oriental Foods under the FIFO and LIFO cost flow assumptions. In Figure 7-13, the net income, ending inventory, and cash balance produced under the two cost flow assumptions are compared.

FIGURE 7-12

Periodic method:  
LIFO assumption
**JL Oriental Foods  
Income Statement  
for the Month Ended December 31, 2011**

Sales (300 lb. × \$5)	\$1,500
Cost of goods sold	<u>320<sup>a</sup></u>
<b>Gross profit</b>	<b>\$1,180</b>
Expenses	400
<b>Loss</b>	<b><u>14<sup>b</sup></u></b>
<b>Net income before taxes</b>	<b>\$ 766</b>
<b>Income tax expense (\$766 × 0.30)</b>	<b><u>230</u></b>
<b>Net income after taxes</b>	<b><u>\$ 536</u></b>

<sup>a</sup>(250 lb × \$1) + (50 lb × \$1.40)

<sup>b</sup>(50 lb × 1.00) + (90 lb × \$1.90)

**JL Oriental Foods  
Balance Sheet  
December 31, 2011**

Cash	\$1,360 <sup>a</sup>
Inventory	<u>176<sup>b</sup></u>
<b>Total assets</b>	<b><u>\$1,536</u></b>
<b>Contributed capital</b>	<b>\$1,000</b>
<b>Retained earnings</b>	<b><u>536</u></b>
<b>Total liabilities and shareholders' equity</b>	<b><u>\$1,536</u></b>

<sup>a</sup>Capital contribution – Purchases + Sales – Expenses – Taxes  
 \$1,000 – (\$300 – \$210) + \$1,500 – \$400 – \$230

<sup>b</sup>(50 lb × \$1) + (100 lb × \$1.40) – (10 lb × \$1.40)

**FIGURE 7-13**  
Comparison of  
FIFO to LIFO

	FIFO	LIFO
<b>Net income</b>	\$ 550	\$ 536
<b>Ending inventory</b>	196	176
<b>Cash balance</b>	1,354	1,360

Assume that on December 31 the market value of rice drops suddenly to \$1.20 per pound. The total market value of Jane's 140 pounds of rice, therefore, is \$168 (140 lb × \$1.20). If Jane used the FIFO assumption, she would record the following journal entry to apply the lower-of-cost-or-market rule:

**Loss on Inventory Write-Down (Lo, -RE)**      28  
**Inventory (-A)**      28  
*Wrote down inventory to market value (\$196 - \$168).*

If Jane prepared financial reports using IFRS and the market price of rice rebounded in the next period from \$1.20 to \$1.50 per pound, \$0.10 above the original \$1.40 cost, she would record a recovery of \$28 ( $[\$1.40 - \$1.20] \times 140$  lbs.) with the following adjusting journal entry. This entry would increase net income, but only to the extent of the recovery (\$0.20), not the entire market price increase (\$0.30).

Inventory (+A)      28  
 Inventory recovery (R, +RE)      28

*Recovery of written-down inventory to original cost.*

Under U.S. GAAP, no entry is recorded for the recovery because the write-down is considered permanent.

If Jane used the LIFO assumption, she would record the following journal entry:

**Loss on Inventory Write-Down (Lo, -RE)**      8  
**Inventory (-A)**      8  
*Wrote down inventory to market value (\$176 - \$168).*

## SUMMARY OF KEY POINTS

### ● *Inventory and how it affects the financial statements.*

Inventory includes asset items held for sale in the ordinary course of business. The ending inventory balance appears on the balance sheet and, for manufacturing and retail companies, is often the largest current asset. The methods used to account for inventory affect the allocation of the capitalized inventory cost between ending inventory and cost of goods sold. This allocation, in turn, affects net income and the ending inventory amount reported on the balance sheet. The effects of inventory accounting methods in the current and subsequent periods can be assessed by examining the following formula:

$$\text{Cost of Goods Sold} = \text{Beginning Inventory} + \text{Purchases} - \text{Ending Inventory}$$

The ending inventory valuation of the current period decreases cost of goods sold, and thereby increases gross profit and net income. Ending inventory of the current period becomes

beginning inventory of the subsequent period. Beginning inventory increases cost of goods sold and decreases gross profit and net income.

Inventory write-downs reduce earnings, and are added back to earnings on the statement of cash flows because they require no cash outflow. Increases (decreases) in inventory balances are subtracted (added) to earnings on the statement of cash flows because they put downward (upward) pressure on the cash balance.

● *Four issues that must be addressed when accounting for inventory.*

Four issues that must be addressed when accounting for inventories are (1) what costs to include in the capitalized inventory cost (what items to include and what costs to attach to these items); (2) perpetual inventory method; (3) which cost flow assumption to use (specific identification, average, FIFO, or LIFO); and (4) how to apply the lower-of-cost-or-market rule.

● *General rules for including items in inventory and attaching costs to these items.*

Items held for sale should be included in a company's inventory if the company has complete and unrestricted ownership of them. Consigned inventory, though in the possession of the consignee, should be reported on the consignor's balance sheet. Shipping terms normally indicate how to account for goods in transit as of the balance sheet date.

Any cost required to bring an inventory item to saleable condition should be capitalized and treated as an inventory cost. This includes all costs that can reasonably be associated with the manufacture, acquisition, storage, or preparation of inventory items.

● *Three cost flow assumptions—average, FIFO, and LIFO.*

Under averaging, average costs are allocated to the goods sold and the goods that remain in ending inventory.

Under FIFO, the first items purchased are assumed to be the first items sold. This assumption matches old inventory costs with sales but places relatively up-to-date inventory costs on the balance sheet. In times of rising inventory costs, this assumption tends to inflate net income and increase a company's tax liability.

Under LIFO, the most recent items purchased are assumed to be the first items sold. This assumption matches current inventory costs with sales but tends to place old and outdated inventory costs on the balance sheet. LIFO can also be costly to implement and may encourage managers to purchase inventory items at inappropriate times. However, this assumption provides a reasonable measure of net income, and in times of rising inventory costs, it helps to minimize a company's tax liability. LIFO users also disclose the LIFO reserve, which allows the computation of FIFO inventory and net income as well as the accumulated tax savings associated with using LIFO. LIFO is allowed under U.S. GAAP but is not allowed under IFRS.

● *The lower-of-cost-or-market rule.*

Under the lower-of-cost-or-market rule, the cost of ending inventory is compared to its market value. If the cost is greater than the market value, the inventory is written down to market and a loss is recognized. If the cost is less than the market value, no write-down is necessary. The lower-of-cost-or-market rule is often criticized because it can be used to create hidden reserves, allowing managers to manipulate income, and it gives rise to reporting inconsistencies. Inventory recoveries are recorded under IFRS but not under U.S. GAAP.

## KEY TERMS

*Note: Definitions for these terms are provided in the glossary at the end of the text.*

Average assumption (p. 304)	FOB (free on board) shipping point (p. 294)
Consignment (p. 294)	Freight-in (p. 295)
First-in, first-out (FIFO) assumption (p. 304)	Goods in transit (p. 294)
FOB (free on board) destination (p. 295)	Inventory recovery (p.311)

Last-in, first-out (LIFO) assumption (p. 304)	Paper profits (p. 307)
LIFO conformity rule (p. 305)	Periodic inventory method (p. 298)
LIFO liquidation (p. 305)	Perpetual inventory method (p. 297)
LIFO reserves (p. 309)	Retail companies (p. 296)
Manufacturing companies (p. 296)	Specific identification (p. 302)
Overhead (p. 296)	Transportation-in (p. 295)

## ETHICS in the Real World

It is well known that inventory fraud is an easy way for a company to produce instant profits and dress up the balance sheet. Many famous frauds have involved the creation of fictitious inventories.

An article in the *Wall Street Journal* reported that “auditors at even the top accounting firms are often fooled [by such shenanigans] . . . outside auditors can fail to catch inventory scams because they either trust management too much or fear they will lose clients by being tougher . . . spotting inventory fraud requires bigger staffs than some accounting firms . . . are willing to send out to do the inventory audits. . . . If auditors were more skeptical of management claims, particularly in bad times, they would look at a far greater portion

of the inventory in certain instances and do more surprise audits, which . . . nowadays are unusual.”

Auditors do face intense competition for clients, and audit fees have been reduced significantly in recent years. Accordingly, there is much pressure to control audit costs by reducing the number of audit hours in an effort to maintain profit levels, and inventory frauds are very difficult to uncover. Alan Winters, the AICPA’s director of audit research, stated, “It is difficult if not impossible for the outside auditor to spot inventory fraud, [especially] if top management is directing it.”

**ETHICAL ISSUE** Consider an auditor who has a large client in danger of being lost due to fee competition (i.e., a competitor has agreed to provide an audit for a lower fee). Is it ethical for this auditor to cut back on the number of hours devoted to auditing the inventory account so that the client can be charged a lower fee and a profit can still be made on this audit?

## INTERNET RESEARCH EXERCISE

At the beginning of the chapter, we noted that the management of Ann Taylor Stores had come under fire for intentionally inflating its inventory values. Briefly describe the operations of Ann Taylor Stores and comment on how the company has performed over the past several years. Begin your search with the Hoover’s Company Finder, which can be found at [www.hoovers.com](http://www.hoovers.com).

## BRIEF EXERCISES

### REAL DATA

#### BE7-1

Inventory

In its 2008 annual report, Hewlett-Packard reported beginning inventory of \$8.0 billion, ending inventory of \$7.9 billion on the balance sheet, and cost of goods sold of \$69.3 billion on the income statement. Compute the inventory purchases made by Hewlett-Packard during 2008.

### REAL DATA

#### BE7-2

Inventory

The following information was taken from the footnotes in the 2008 annual report of Johnson & Johnson.

	2008	2007
<b>Raw materials and supplies</b>	<b>\$ 839</b>	<b>\$ 905</b>
<b>Goods in process</b>	<b>1,372</b>	<b>1,385</b>
<b>Finished goods</b>	<b>2,841</b>	<b>2,821</b>
	<u><b>\$5,052</b></u>	<u><b>\$5,110</b></u>

- From information in the footnote alone, indicate whether Johnson & Johnson is a retailer, manufacturer, or service firm. Explain.
- From information in the footnote alone, indicate whether Johnson & Johnson uses the LIFO or FIFO inventory cost flow assumption. Explain. (*Hint*: What disclosures are required under LIFO? under FIFO?)

## REAL DATA

## BE7-3

FIFO vs. LIFO

General Electric uses the LIFO inventory cost flow assumption, reporting inventories on its 2008 balance sheet of \$13.7 billion and a LIFO reserve of approximately \$706 million. What would be GE's 2008 inventory balance if it used the FIFO assumption instead? Why is the disclosure of the LIFO reserve useful to financial statement users?

## EXERCISES

## E7-1

Goods in transit as of the end of the accounting period

Dallas Manufacturing engaged in five transactions involving inventory at the end of 2011:

- Ordered \$50,000 of inventory on December 29, 2011. The goods were shipped on December 30, 2011, with the terms FOB shipping point. Dallas received the inventory on January 4, 2012.
- Received an order to sell inventory with a cost of \$40,000. The goods were shipped to the customer on December 31, 2011, and received on January 3, 2012. The terms of the sale were FOB shipping point.
- Received an order to sell inventory with a cost of \$15,000. The goods were shipped to the customer on December 29, 2011, and received on January 2, 2012. The terms of the sale were FOB destination.
- Ordered \$10,000 of inventory on December 27, 2011. The inventory was shipped on December 27, 2011, with the terms FOB destination. Dallas received the inventory on December 31, 2011.
- Ordered \$75,000 of inventory on December 30, 2011. The inventory was shipped on December 31, 2011, with the terms FOB destination. Dallas received the inventory on January 3, 2012.

Assume that Dallas included in inventory (12/31/11) all items from the five cases above. Explain how the resulting financial statements would be misstated.

## E7-2

Accounting for inventory purchases

Nick's Fish Market purchased Maine lobster on account on October 10, 2011, for a gross price of \$76,000. Nick also purchased Alaskan king crab on account on October 11, 2011, for a gross price of \$36,000. The terms of both sales were 2/15, n/30. Nick paid for the first purchase on October 20, 2011, and for the second purchase on October 30, 2011. He uses the perpetual inventory method.

Prepare journal entries for each transaction.

## E7-3

Accounting for inventory purchases

Baymont Corporation purchased inventory on account on March 3, 2011, for a gross price of \$50,000. The company purchased additional inventory on account on March 10, 2011, for a gross price of \$140,000. The terms of both sales were 3/12, n/30. Baymont Corporation paid for the first purchase on April 25, 2011, and for the second purchase on March 20, 2011. The company prepares monthly adjusting journal entries and uses the perpetual inventory method.

Prepare journal entries for each transaction.

## REAL DATA

## E7-4

Compute the missing values

The following information was extracted from annual reports of 3M (dollars in millions).

	2008	2007	2006
<b>Beginning inventory</b>	?	?	\$ 2,162
<b>Purchases</b>	13,540	?	12,152
<b>Goods available for sale</b>	?	?	14,314
<b>Ending inventory</b>	?	2,852	?
<b>Cost of goods sold</b>	\$13,379	\$12,735	\$11,713

Compute the missing information.

## E7-5

Carrying inventories: Perpetual and periodic methods

The following information comes from the records of Telly's Supply:

<b>Beginning inventory</b>	\$32,000
<b>Inventory purchases</b>	85,000
<b>Transportation-in</b>	4,300

An inventory count taken at year-end indicates that inventory with a cost of \$50,000 is on hand as of December 31, 2011.

Assume that inventory purchases and transportation-in are both reflected in the inventory account, which shows an ending balance of \$52,000. Compute cost of goods sold along with any adjusting entries required at the end of the period.

## REAL DATA

## E7-6

The financial statement effects of inventory errors

The Finish Line, Inc. reported the following items in its fiscal 2008 financial report (dollars in millions).

	2008	2007
<b>Sales</b>	\$1,262	\$1,277
<b>Cost of goods sold:</b>		
<b>Beginning inventory</b>	\$ 268	\$ 287
<b>Purchases</b>	857	887
<b>Goods available for sale</b>	\$1,125	\$1,174
<b>Less: Ending inventory</b>	239	268
<b>Cost of goods sold</b>	886	906
<b>Gross profit</b>	<u>\$ 376</u>	<u>\$ 371</u>

Assume that counting errors caused the ending inventory in 2007 to be understated by \$50 and the ending inventory in 2008 to be overstated by \$50.

- Compute the impact of these errors on cost of goods sold for the year ended December 31, 2007, and on the inventory balance as of December 31, 2007.
- Compute the impact of these errors on cost of goods sold for the year ended December 31, 2008, and on the inventory balance as of December 31, 2008.
- What is the impact of these errors on cost of goods sold over the two-year period ended December 31, 2008?

## REAL DATA

## E7-7

Inventory and the statement of cash flows

The Japanese firm Sony prepares its financial statements using U.S. GAAP. Two items related to its inventory appeared in the operating section of the 2009 statement of cash flows, both in millions of yen: loss on impairment of assets (38,308) and change in inventories (160,432). On the statement of cash flows both items were being added to Sony's 2009 net loss of 98,938 in the calculation of a highly positive (407,153) net cash provided by operating activities number. Included in the loss on impairment of assets was a sizable inventory write-down.

- Explain how net cash provided by operating activities can be such a large positive number while net income is negative.

- b. Provide the basic structure of the inventory write-down entry, and explain why this amount would appear in the operating section of the statement of cash flows and be added to the net loss in the calculation of net cash provided by operating activities.
- c. Did Sony's inventory increase or decrease during the year, and how do you know?

**E7-8**

Income manipulation  
under specific  
identification

Marian's Furs specializes in full-length mink coats. As of January 1, Marian had four top-of-the-line coats. Although the four coats are equivalent, they were purchased the previous year at different costs:

	Cost
<b>Coat 1</b>	<b>\$8,400</b>
<b>Coat 2</b>	<b>7,100</b>
<b>Coat 3</b>	<b>7,600</b>
<b>Coat 4</b>	<b>6,800</b>

During January a customer decided to buy any one of the mink coats for \$12,000. This was the only sale in January.

- a. If Marian wished to maximize January's profits and ending inventory, which of the minks would she have sold to the customer? Compute the gross profit on the sale and January's ending inventory. Discuss why Marian might wish to maximize profits and ending inventory.
- b. If Marian wished to minimize January's profits and ending inventory, which of the minks would she have sold to the customer? Compute the gross profit on the sale and January's ending inventory. Discuss why Marian might wish to minimize profits and ending inventory.

**E7-9**

Inventory  
assumptions and  
manipulating  
income under  
specific  
identification

Vinnie's House of Televisions has 75 identical 27-inch color monitors in stock on January 1, 2012. Vinnie maintains records of the serial number of each monitor to track its costs. Vinnie purchased the 75 monitors on December 5, 2011, for \$450 each. He also purchased 50 on January 2, 2012, for \$500 each and an additional 65 on January 15, 2012, for \$600 each. Each monitor is priced to sell at \$1,000. Vinnie sold 130 monitors during the month of January.

- a. Compute gross profit and ending inventory for the month if the company adheres to each of the following:
  - (1) FIFO cost flow assumption
  - (2) Averaging cost flow assumption
  - (3) LIFO cost flow assumption
- b. Assume that Vinnie uses the specific identification method to compute the cost of goods sold. Explain how Vinnie could manipulate the gross profit number. What are the highest and the lowest gross profit amounts Vinnie could report? What are some possible factors that could motivate Vinnie to report either the highest or the lowest net income amount?

**E7-10**

Inventory cost flow  
assumptions

Watkins Corporation began operations on January 1, 2010. The 2010 and 2011 schedules of inventory purchases and sales are as follows:

**2010:**

<b>Purchase 1</b>	<b>10 units @ \$10 per unit</b>	<b>\$100</b>
<b>Purchase 2</b>	<b>20 units @ \$12 per unit</b>	<b>240</b>
<b>Total purchase costs</b>		<b><u>\$340</u></b>
<b>Sales</b>	<b>15 units @ \$30 per unit</b>	<b>\$450</b>

**2011:**

<b>Purchase 1</b>	<b>10 units @ \$13 per unit</b>	<b>\$130</b>
<b>Purchase 2</b>	<b>15 units @ \$15 per unit</b>	<b>225</b>
<b>Total purchase costs</b>		<b><u>\$355</u></b>
<b>Sales</b>	<b>20 units @ \$35 per unit</b>	<b>\$700</b>



Complete the following schedule, and briefly discuss the trade-offs associated with choosing an inventory cost flow assumption.

2010	FIFO	Weighted Average	LIFO
<b>Cost of goods sold</b>			
<b>Gross profit (Sales – COGS)</b>			
<b>Ending inventory</b>			
2011	FIFO	Weighted Average	LIFO
<b>Cost of goods sold</b>			
<b>Gross profit (Sales – COGS)</b>			
<b>Ending inventory</b>			

**E7-11**

Inventory flow assumptions over several periods and income taxes

Heller Bottling Company began business in 2008. Inventory units purchased and sold for the first year of operations and each of the following four years follow:

	Units Purchased	Cost per Unit	Units Sold
2008	10,000	\$12	5,000
2009	12,000	16	16,000
2010	5,000	18	2,000
2011	10,000	21	10,000
2012	2,000	23	6,000

Inadequate cash flows forced Heller Bottling Company to cease operations at the end of 2012.

- Compute cost of goods sold for each of the five years if the company uses the following:
  - LIFO cost flow assumption
  - FIFO cost flow assumption
  - Averaging cost flow assumption
- Does the choice of a cost flow assumption affect total net income over the life of a business? Explain your answer.
- If the choice of a cost flow assumption does not affect net income over the life of a business, how does the choice of LIFO give rise to a tax benefit?

**REAL DATA****E7-12**

Using the LIFO reserve

The following disclosure was included in the footnotes of Caterpillar's 2008 annual report. The company uses the LIFO cost flow assumption and reported net income of \$3,557 for 2008. The company's effective tax rate is 21 percent (dollars in millions).

	2008	2007
<b>Inventories at current cost</b>	<b>\$11,964</b>	<b>\$9,821</b>
<b>Less: Adjustment to LIFO basis</b>	<b><u>3,183</u></b>	<b><u>2,617</u></b>
<b>Inventories on LIFO basis</b>	<b><u>\$ 8,781</u></b>	<b><u>\$7,204</u></b>

- Compute 2008 ending inventory for Caterpillar assuming it changed from LIFO to FIFO at the end of 2008.
- Compute the accumulated income tax savings enjoyed by Caterpillar due to the choice of LIFO as opposed to FIFO.
- Compute 2008 reported net income for Caterpillar assuming it changed from LIFO to FIFO several years before.
- Explain how the information generated in (a), (b), and (c) could be useful.
- Explain why Caterpillar might oppose a requirement to adopt IFRS by U.S. companies.

**E7-13**

The lower-of-cost-or-market rule and hidden reserves

Central Incorporated has two items in inventory as of December 31, 2011. Each item was purchased for \$40. Company management chose to write down Item #1 to \$28, which at year-end was assessed to be its market value. Management did not write down Item #2 because its market value was estimated to be greater than \$40. During 2012, each item was sold for \$50 cash.

- Prepare journal entries for each activity (i.e., the write-down, the sale of Item #1, and the sale of Item #2).
- Compute the profit or loss associated with each item in 2011 and 2012.
- Explain how management could manipulate reported earnings when applying the lower-of-cost-or-market rule.

**REAL DATA****E7-14**

Inventory accounting under U.S. GAAP and IFRS

In its 2008 annual report the Unilever Group, which published IFRS-based financial statements, reported the following in the inventory footnote (in million euros).

	2008	2007
<b>Raw materials and consumables</b>	<b>1,437</b>	<b>1,406</b>
<b>Finished goods and goods for resale</b>	<b><u>2,452</u></b>	<b><u>2,488</u></b>
<b>Total inventories</b>	<b>3,889</b>	<b>3,894</b>

“During 2008, 246 million euros (2007: 177 million euros) was charged to the income statement for damaged, obsolete, and lost inventories. In 2008, 23 million euros (2007: 25 million euros) was released to the income statement (recoveries) for inventory provisions taken in earlier years.”

- Is Unilever a manufacturer or a retailer, and how do you know?
- Does Unilever use the FIFO or LIFO inventory assumption, and how do you know?
- What is an inventory write-down and an inventory recovery? Record the entries made by Unilever at the end of 2008 for the write-down and recovery.
- How would Unilever’s accounting have been different if it used U.S. GAAP instead of IFRS?

**PROBLEMS****P7-1**

Purchases and cash discounts

On November 15 and 26, Brown and Swazey purchased merchandise on account for gross prices of \$8,000 and \$12,000, respectively. Terms of both purchases were 2/10, n/30. None of these items has been sold, and both accounts are paid in full on December 2.

**REQUIRED:**

Provide all the journal entries that would be recorded for these events.

**P7-2**

The gross method and partial payments

Stober Corporation made two purchases of inventory on account during the month of March. The first purchase was made on March 5 for \$30,000, and the second purchase was made on March 10 for \$60,000. The terms of each purchase were 2/10, n/30. The first purchase was settled on March 13, and the second was settled on July 18.

**REQUIRED:**

- Prepare all the necessary journal entries associated with these transactions.
- Assume that with respect to the second purchase, the company settled two-thirds of the accounts payable balance on March 19 and settled the remaining balance on August 7. The first purchase was settled on March 13. Prepare all the necessary journal entries associated with the second purchase.

## REAL DATA

## P7-3

The financial effects  
of inventory errors

The following information was taken from the records of Eli Lilly, a major pharmaceutical (dollars in millions).

	2008	2007	2006
Sales	\$20,378	\$18,634	\$15,691
Cost of goods sold	<u>4,383</u>	<u>4,249</u>	<u>3,547</u>
Gross profit	\$15,995	\$14,385	\$12,144
Expenses	<u>18,067</u>	<u>11,432</u>	<u>9,481</u>
Net income (loss)	<u>\$ (2,072)</u>	<u>\$ 2,953</u>	<u>\$ 2,663</u>

Assume that ending inventory was overstated by \$500 in 2006, understated by \$150 in 2007, and overstated by \$320 in 2008.

**REQUIRED:**

Compute the corrected cost of goods sold and net income for 2006, 2007, and 2008.

## P7-4

The financial  
statement and  
income tax effects  
of averaging, FIFO,  
and LIFO

The purchase schedule for Lumbermans and Associates is as follows:

Date	Items Purchased	Cost per Item
March 15	6,000	\$1.30
July 30	9,000	1.50
December 17	<u>7,000</u>	1.60
Total	<u>22,000</u>	

The inventory balance as of the beginning of the year was \$15,000 (15,000 units @ \$1), and an inventory count at year-end indicated that 11,000 items were on hand. Sales and expenses (excluding cost of goods sold) totaled \$55,000 and \$15,000, respectively. The federal income tax is 30 percent of taxable income.

**REQUIRED:**

- Prepare three income statements, one under each of the assumptions: FIFO, average, and LIFO.
- How many tax dollars would be saved by using LIFO instead of FIFO?
- Assume that the market value of an inventory item dropped to \$1.35 as of year-end. Apply the lower-of-cost-or-market rule, and provide the appropriate journal entry (if necessary) under the FIFO, averaging, and LIFO assumptions.
- Repeat (a) above assuming that the costs per item were as follows:

Beginning inventory	\$1.60
March 15	1.40
July 30	1.30
December 17	1.20

Which of the three assumptions gives rise to the highest net income and ending inventory amounts now? Why?

## P7-5

Inventory accounting,  
earnings, taxes, and  
lower-of-cost-  
or-market

The purchase schedule for Laundryman's Corporation is as follows:

Date	Items Purchased	Cost per Item
February 10	1,000	\$75
May 15	3,000	\$80
October 20	4,000	\$82

The inventory balance as of the beginning of the year was \$35,000 (500 units @ \$70 each). During the year ended December 31, the company sold 6,000 units for \$150 per unit. Expenses other than cost of goods sold totaled \$125,000. The effective income tax rate is 30 percent.

**REQUIRED:**

- Prepare three income statements, one under each assumption—FIFO, LIFO, average.
- How many tax dollars would be saved by using LIFO instead of FIFO?
- Assume the market value of an item of inventory dropped to \$78 as of the end of the year. Apply the lower-of-cost-or-market rule, and provide the appropriate journal entry (if necessary) under the FIFO, LIFO, and average assumptions.
- Repeat (a) above, assuming the costs per item were:

<b>Beginning inventory</b>	<b>\$80</b>
<b>February 10</b>	<b>\$78</b>
<b>May 15</b>	<b>\$77</b>
<b>October 20</b>	<b>\$75</b>

Which of the three assumptions now gives rise to the highest net income and ending inventory?

**P7-6**

The gross method,  
and the LIFO and  
FIFO cost flow  
assumptions

The Magic Teddy Bear Toy Company entered into the following transactions during January 2011:

- January 3: Purchased 7,000 teddy bears at \$20 each with the terms 2/10, n/30.**  
**3: Sold 2,000 teddy bears at \$50 each for cash.**  
**9: Sold 4,000 teddy bears at \$50 each on account.**  
**10: Settled the purchase made on January 3.**  
**15: Purchased 10,000 teddy bears. Three thousand of the bears were purchased for cash at \$24.50 each, and the remaining bears were purchased on account for a gross price of \$25.00 each (terms 2/10, n/30).**  
**19: Purchased 7,000 teddy bears at \$26 each with the terms 2/10, n/30.**  
**23: Paid for one-half of the teddy bears purchased on account on January 15.**  
**27: Purchased 4,000 teddy bears at \$28 each for cash.**  
**28: Settled the remaining open account from the purchase made on January 15.**  
**28: Settled the open account from the purchase made on January 19.**  
**29: Sold 6,000 teddy bears at \$60 each for cash.**  
**30: Sold 5,000 teddy bears at \$60 each on account.**  
**31: Purchased 2,000 teddy bears at \$30 each for cash.**  
**31: Received a freight bill in the amount of \$30,000, covering all purchases made during January 2011.**

The Magic Teddy Bear Toy Company has 5,000 teddy bears on hand at \$19 each as of January 1, 2011.

**REQUIRED:**

Assume that The Magic Teddy Bear Toy Company accounts for purchase cash discounts under the gross method. Prepare all necessary entries, including adjusting journal entries, during January 2011, if the company uses the following:

- LIFO cost flow assumption
- FIFO cost flow assumption

(Hint: Compute the total cost per unit in order to calculate ending inventory and cost of goods sold.)

## REAL DATA

## P7-7

Using LIFO and saving tax dollars

Financial statements as of December 31, 2008, for Johnson & Johnson are as follows. The company used the FIFO inventory cost flow assumption to prepare these statements (dollars in millions).

**Income Statement**

Sales		\$63,747
Cost of goods sold:		
Beginning inventory	\$ 5,110	
Purchases	<u>18,453</u>	
Goods available for sale	\$23,563	
Less: Ending inventory	<u>5,052</u>	
Cost of goods sold		<u>18,511</u>
Gross profit		\$45,236
Expenses		<u>28,307</u>
Net income before taxes		\$16,929
Federal income tax (24%)		<u>3,980</u>
Net income		<u>\$12,949</u>

**Balance Sheet**

Cash	\$10,768	Current liabilities	\$20,852
Inventory	5,052	Long-term liabilities	21,549
Other assets	<u>69,092</u>	Shareholders' equity	<u>42,511</u>
		Total liabilities and	
Total assets	<u>\$84,912</u>	shareholders' equity	<u>\$84,912</u>

Assume that on December 30, 2008, Johnson & Johnson decided to change from the FIFO to the LIFO inventory cost flow assumption. Assume that the ending inventory value under the LIFO assumption is \$4,000.

**REQUIRED:**

- Compute the change in Johnson & Johnson's current ratio associated with the change from FIFO to LIFO. Round to two decimal places.
- Compute the change in Johnson & Johnson's gross profit and net income associated with the change from FIFO to LIFO. Assume that the dollar amount of the change is reflected in cost of goods sold.
- How many tax dollars would be saved by the change from FIFO to LIFO?
- Discuss some of the disadvantages associated with the change to LIFO.

## P7-8

LIFO liquidations, income tax implications, and year-end purchases

Ruhe Auto Supplies began operations in 1998. The company's inventory purchases and sales in the first and subsequent years of operations are as follows:

Year	Units Purchased	Cost per Unit	Units Sold
1998	20,000	\$ 5	4,000
1999	8,000	10	8,000
2000	7,000	15	9,000
2001	8,500	20	7,000
2002	6,000	25	7,500
2003	7,500	30	7,000
2004	9,000	50	8,000
2005	8,000	65	9,000
2006	9,500	70	9,000
2007	7,000	75	8,000
2008	8,500	80	8,500
2009	9,000	85	7,500
2010	8,500	90	9,500
2011	9,500	95	20,000

The company's federal income tax rate is 30 percent. For the year ended December 31, 2011, Ruhe Auto Supplies generated \$3,000,000 in revenues and incurred \$800,000 in expenses (exclusive of cost of goods sold). Ruhe Auto Supplies uses the LIFO cost flow assumption to account for inventory.

**REQUIRED:**

- Compute ending inventory as of December 31, 2011. Identify the number of units in ending inventory and the costs attached to each unit.
- Compute the company's 2011 income tax liability and net income after taxes for the year ended December 31, 2011.
- Assume that Ruhe Auto Supplies was able to purchase an additional 10,500 units of inventory on December 31, 2011, for \$95 per unit. Would you advise the company to purchase these additional units? Explain your answer.

**P7-9**

Using the LIFO  
reserve

You are a financial analyst currently reviewing the financial statements of Danner International and Brady Enterprises, two companies of similar size within the same industry. Net incomes of \$39,300 and \$42,700 were reported for 2011 by Danner and Brady, respectively. After a thorough comparison of the accounting methods used by the two companies, you find that they are similar except for the inventory cost flow assumption—Danner uses FIFO and Brady uses LIFO. You conduct a further review of Brady's footnotes and discover the following. Inventories declined during 2011, causing a LIFO liquidation, which accounted for \$8,000 of the before-tax net income reported in 2011.

	2011	2010
<b>Inventories at current cost</b>	<b>\$36,200</b>	<b>\$42,400</b>
<b>Less: Adjustment to LIFO</b>	<b>3,500</b>	<b>4,800</b>
<b>Inventories at LIFO</b>	<b><u>\$32,700</u></b>	<b><u>\$37,600</u></b>

Brady's effective tax rate is 35 percent.

**REQUIRED:**

- Restate Brady's net income assuming there was no LIFO liquidation in 2011. How does the restated amount compare to Danner's net income?
- Restate Brady's 2011 reported net income as if the company had always been a FIFO user. Is Brady's restated reported income higher or lower than Danner's reported net income? Explain.
- As of the end of 2011, how much accumulated income tax had Brady saved due to its choice of LIFO instead of FIFO? How much as of the end of 2010? Does LIFO save taxes in every year? Explain.
- Would it be advisable for Brady to change its cost flow assumption from LIFO to FIFO? Discuss.

**P7-10**

Avoiding LIFO  
liquidations

IBT has used the LIFO inventory cost flow assumption for five years. As of December 31, 2010, IBT had 700 items in its inventory, and the \$9,000 inventory dollar amount reported on the balance sheet consisted of the following costs:

When Purchased	Number of Items	Cost per Item	Total
2007	500	\$12	\$6,000
2009	200	15	3,000
<b>Total</b>	<b><u>700</u></b>		<b><u>\$9,000</u></b>

During 2011, IBT sold 900 items for \$75 each and purchased 350 items at \$30 each. Expenses other than cost of goods sold totaled \$20,000, and the federal income tax rate is 30 percent of taxable income.

**REQUIRED:**

- Prepare IBT's income statement for the year ending December 31, 2011.
- Assume that IBT purchased an additional 550 items on December 20, 2011, for \$30 each. Prepare IBT's income statement for the year ending December 31, 2011.
- Compare the two income statements, and discuss why it might have been wise for IBT to purchase the additional items on December 20. Discuss some of the disadvantages of such a strategy.

**P7-11**Inventory accounting  
under IFRS

The 2011 inventory activity for Helio Brothers, a discount retailer that prepares financial statements under IFRS using the FIFO cost flow assumption, is provided below.

<b>Beginning inventory</b>	<b>500 items @ \$2.00/item</b>	<b>\$ 1,000</b>
<b>Purchases</b>	<b>6,000 items @ \$2.50/item</b>	<b>15,000</b>
<b>Sales</b>	<b>6,100 items @ \$5.00/item</b>	<b>30,500</b>

Many of the items in the company's inventory at the end of 2011 were judged to be outdated, and on average the market value of the remaining inventory was estimated at \$1.50 per item.

**REQUIRED:**

- Compute Helio's ending inventory and net income for 2011.
- Early in 2012 styles appeared to change, and the average market price of the inventory written down at the end of 2011 rebounded to \$2.80 per item. Record the entry made by Helio to recognize the inventory recovery. What entry would Helio record if it used U.S. GAAP instead of IFRS?

**ISSUES FOR DISCUSSION****REAL DATA****ID7-1**Choosing FIFO  
or LIFO

A partner from a major accounting firm made the following comment when asked about the accounting methods used by companies in the software industry: "Accounting policies that have adverse short-term effects on financial statements cannot help the industry raise capital."

After reading such a comment, one might conclude that managers who wish to raise capital by borrowing from banks or issuing equity or debt securities should choose the FIFO cost flow assumption instead of LIFO. Yet, others have written that they are "puzzled" about why thousands of U.S. companies use FIFO instead of LIFO.

**REQUIRED:**

Discuss the above comments.

**REAL DATA****ID7-2**

LIFO reporting

The following information was taken from the inventory footnote contained in the 2009 annual report of Deere & Company, the agricultural equipment manufacturer.

	<u>2009</u>	<u>2008</u>
<b>Finished goods</b>	\$2,437	\$2,677
<b>Work in process</b>	387	519
<b>Raw materials</b>	<u>940</u>	<u>1,170</u>
<b>Inventories at FIFO</b>	3,764	4,366
<b>Excess of FIFO over LIFO</b>	<u>(1,367)</u>	<u>(1,324)</u>
<b>Inventories at LIFO</b>	<u>\$2,397</u>	<u>\$3,042</u>

Most inventories owned by Deere & Company and its U.S. equipment subsidiaries are valued at cost, on the last-in, first-out (LIFO) basis. Remaining inventories are generally valued at the lower of cost, on the first-in, first-out (FIFO) basis, or market. The value of gross

inventories on the LIFO basis represented 59 percent and 64 percent of worldwide gross inventories at FIFO value on October 31, 2009 and 2008, respectively.

**REQUIRED:**

- Why would a potential investor or creditor who is considering investing in Deere be interested in the difference between LIFO and FIFO inventory values?
- Explain why reducing certain inventory quantities, valued under LIFO, would increase net income and why an investor would be interested in such a disclosure.
- Deere's effective tax rate is 34 percent. Approximately how much more income tax would Deere have paid if at the end of 2009 it switched to FIFO for all of its inventory?
- Explain why Deere & Company might resist adopting IFRS.

**REAL DATA****ID7-3**

LIFO liquidation and hidden reserves

In the early 1980s, an oil glut caused Texaco, a LIFO user, to delay drilling, which cut its oil inventory levels by 16 percent. The LIFO cushion (i.e., the difference between LIFO and FIFO inventory values) that was built into those barrels over the year amounted to \$454 million and transformed what would have been a drop in net income to a modest gain.

**REQUIRED:**

Explain how using LIFO could be interpreted as building "hidden reserves."

**REAL DATA****ID7-4**

The lower-of-cost-or-market rule and the recognition of loss/income

TII Industries makes over-voltage protectors, power systems, and electronic products primarily for use in the communications industry. Several years ago, the company reported that it took "a substantial inventory write-down," resulting in a loss for its third quarter ending June 24. The write-down was estimated to be \$12 million and stems from customers' changes in product specifications.

**REQUIRED:**

- Provide the journal entry to record the write-down.
- Assume that the original cost of the inventory was \$52 million and that it was written down to its market value of \$40 million. If TII Industries sells it for \$48 million cash in the following period, what journal entries would be recorded? Assume that TII uses the perpetual inventory method.
- Applying the lower-of-cost-or-market rule in this case would cause TII to recognize a loss in the period of the write-down and income in the subsequent period. Does such recognition seem appropriate? Why or why not?

**REAL DATA****ID7-5**

Inventory write-down

The *Wall Street Journal* (April 17, 1998) reported that "Valero Energy Corp. said it will take a first-quarter charge of \$37.7 million, or 43 cents per share, related to lower prices for crude oil and refined products. The energy-refining and marketing company characterized the write-down as an accounting 'to reduce the carrying value of our crude oil and refined products inventories to their market value.'"

**REQUIRED:**

- What exception to the principles of financial accounting is being followed by Valero when it writes down its inventories?
- How would the write-down affect the financial statements?
- How would the write-down affect the company's current ratio and its inventory turnover ratio (increase, decrease, or no effect)?
- Explain how such a write-down could be used to manipulate earnings and what two reporting strategies Valero could be following.
- If crude oil prices rebounded in 1999, explain how Valero, which uses U.S. GAAP, would account for the rebound. What if Valero used IFRS instead of U.S. GAAP?

**REAL DATA****ID7-6**

Interpreting the inventory footnote

The 2008 annual report of Sherwin Williams, a manufacturer of paint products, contained the following footnote (dollars in thousands).



*Note 4-Inventories*

*Inventories were stated at the lower of cost or market with cost determined principally on the last-in, first-out (LIFO) method. The following presents the effect on inventories, net income, and net income per share had the Company used the first-in, first-out (FIFO) inventory valuation method adjusted for income taxes at the statutory rate and assuming no other adjustments. Management believes that the use of LIFO results in a better matching of costs and revenues. The information is presented to enable the reader to make comparisons with companies using the FIFO method of inventory valuation.*

	2008	2007	2006
<b>Percent of total inventory on LIFO</b>	<b>86%</b>	<b>83%</b>	<b>88%</b>
<b>Excess of FIFO over LIFO</b>	<b>\$321,280</b>	<b>\$241,579</b>	<b>\$226,818</b>
<b>Decrease in net income due to LIFO</b>	<b>(49,184)</b>	<b>(7,844)</b>	<b>(24,033)</b>
<b>Decrease in net income per common share due to LIFO</b>	<b>(.41)</b>	<b>(.06)</b>	<b>(.17)</b>

**REQUIRED:**

- Sherwin Williams reported inventories on the balance sheet at \$864,200 (2008), \$887,465 (2007), and \$825,179 (2006). Compute the company's ending inventory had it shifted to FIFO at the end of 2008 (dollars in thousands).
- Estimate the taxes saved by Sherwin Williams because it uses LIFO instead of FIFO. Assume a tax rate of 33 percent.
- Does LIFO provide a better matching of current costs to revenues in times of inflation? Why? Is the same true in times of deflation?

**REAL DATA****ID7-7**

"Thinning" inventories during slow times

When it released its first quarter earnings for fiscal 2007, FedEx Corporation also projected that its shipping volume would be lighter and that its profit growth would be the lowest in years. As reported in the *Wall Street Journal* (March 22, 2007), FedEx cited the fact that many companies were "thinning inventories to ride out the economic slowdown."

**REQUIRED:**

- What does it mean for a company to "thin" its inventories? How would such a business practice aid a company during an economic recession?
- Where in the financial statements would a reader be able to discern that a company was thinning its inventories? What effect would this have on the reader's analysis of the company's financial performance?
- Do the goods shipped by FedEx appear on FedEx's balance sheet? Discuss.

**REAL DATA****ID7-8**

Inventory and the statement of cash flows

The 2008 statement of cash flows for JCPenney reports (dollars in millions) net cash from operating activities of \$1,155 (2008), \$1,249 (2007), and \$1,258 (2006). Included on the statement of cash flows (indirect method) in the computation of net cash from operating activities are adjustments for inventory of \$382 (2008), -\$241 (2007), and -\$190 (2006).

**REQUIRED:**

Explain the nature of these adjustments and what they tell us about JCPenney's inventory balances in 2008, 2007, and 2006. Discuss the cash flow implications of these inventory adjustments.

**REAL DATA****ID7-9**

Different inventory disclosures

JCPenney Company, Inc. discloses its inventory in the following manner on the balance sheet itself (dollars in millions).

	2008	2007
<b>Merchandise inventory (net of LIFO reserves of \$21 and \$1)</b>	<b>\$3,259</b>	<b>\$3,641</b>

SUPERVALU, Inc., on the other hand, disclosed information about its LIFO and FIFO values in a footnote to its 2009 financial statements. The balance sheet inventory values (in millions) were \$2,709 and \$2,776 for 2009 and 2008, respectively.

*Approximately 81 percent and 82 percent of the company's inventories were valued using the last-in, first-out (LIFO) method inventories for fiscal 2009 and 2008, respectively. The first-in, first-out (FIFO) method is primarily used to determine cost for some of the remaining highly perishable inventories. If the FIFO method had been used to determine cost of inventories for which the LIFO method is used, the company's inventories would have been higher by approximately \$258 million at February 28, 2009, and \$180 million at February 23, 2008.*

**REQUIRED:**

- For which of the two companies is the difference between LIFO and FIFO larger as a percent of total inventories?
- Compute ending inventory as of the end of 2008, assuming the FIFO method, for JCPenney and as of the end of 2009 for SUPERVALU.
- Estimate the tax savings enjoyed by the two companies due to their use of LIFO instead of FIFO.
- Why might SUPERVALU use FIFO for “highly perishable inventories”?

**REAL DATA**

**ID7-10**

Analyzing inventory management on the statement of cash flows

Target Corp. is a major U.S. retailer that historically has carried inventory balances in excess of 15% of its total assets, and in a typical year the cost of its sold inventory approximates 70% of total sales. In the operating section of its 2008 statement of cash flows, Target added the \$77 million decrease in its inventory balance and subtracted the \$389 million increase in its accounts payable balance to net earnings in the calculation of cash flow provided by operations.

**REQUIRED:**

- Why were these adjustments reported on the statement of cash flows?
- Assuming that most of the accounts payable are owed to its inventory suppliers, what does the difference between these two amounts indicate about how Target's operating cash flows were managed during 2008?

**REAL DATA**

**ID7-11**

Nike SEC Form 10-K

The Nike SEC Form 10-K is reproduced in Appendix C. Review it and answer the following questions.

**REQUIRED:**

- How large is inventory compared to the other assets on NIKE's balance sheet? Did inventory increase, decrease, or remain the same as a percent of total assets from 2008 to 2009?
- What is the primary cost associated with NIKE's cost of sales, and how did this account vary as a percent of sales from 2007 to 2009?
- Did NIKE appear to pay off its suppliers faster or slower during 2009 compared to 2008?
- Review the operating section of NIKE's statement of cash flows and comment on the cash flow implications associated with the changes in the primary working capital accounts during 2009.
- See Note 1. Does NIKE use the LIFO, FIFO, or averaging assumption? See Note 2. Why are NIKE's inventories predominantly finished goods?